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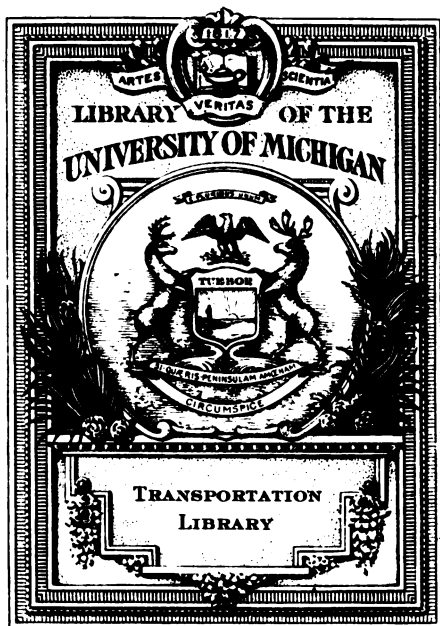
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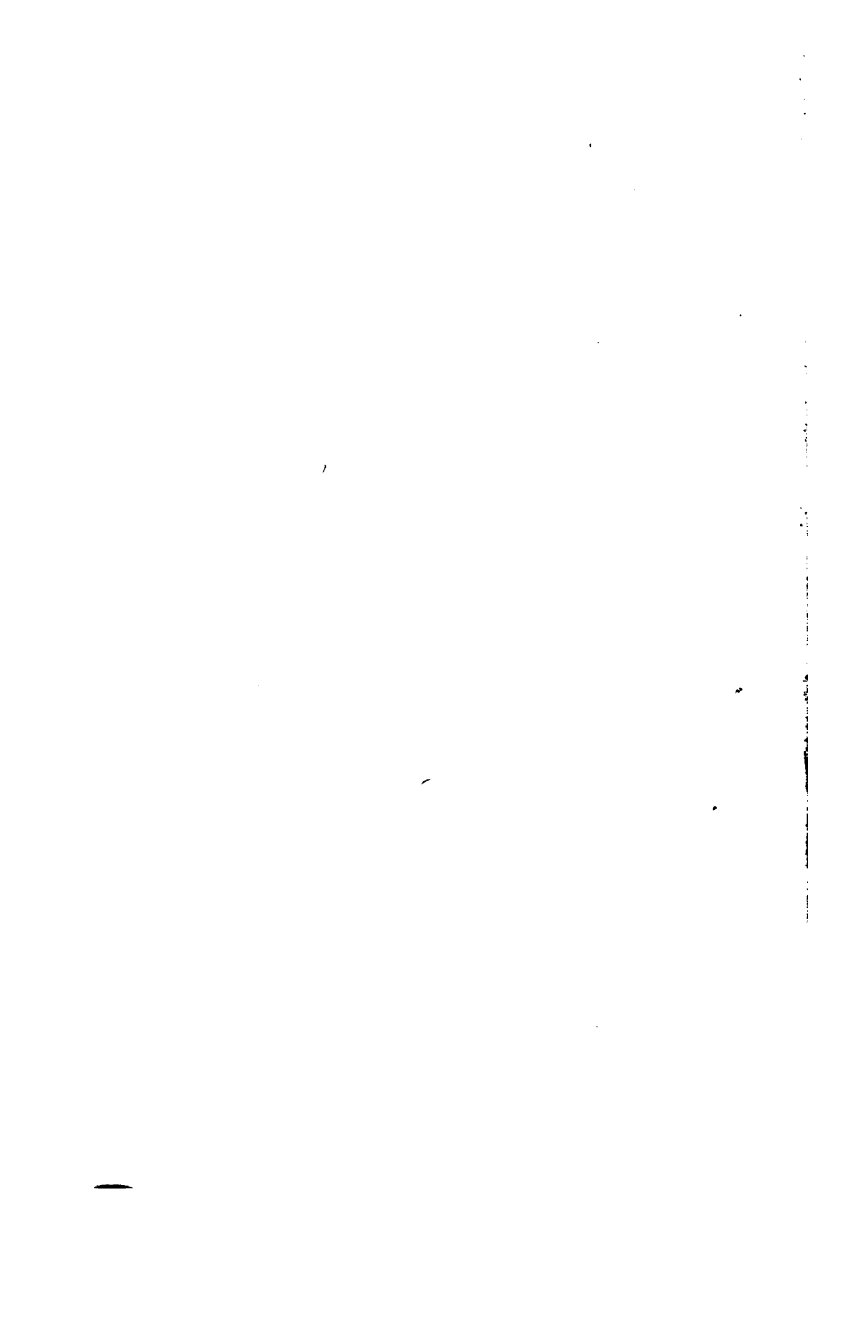
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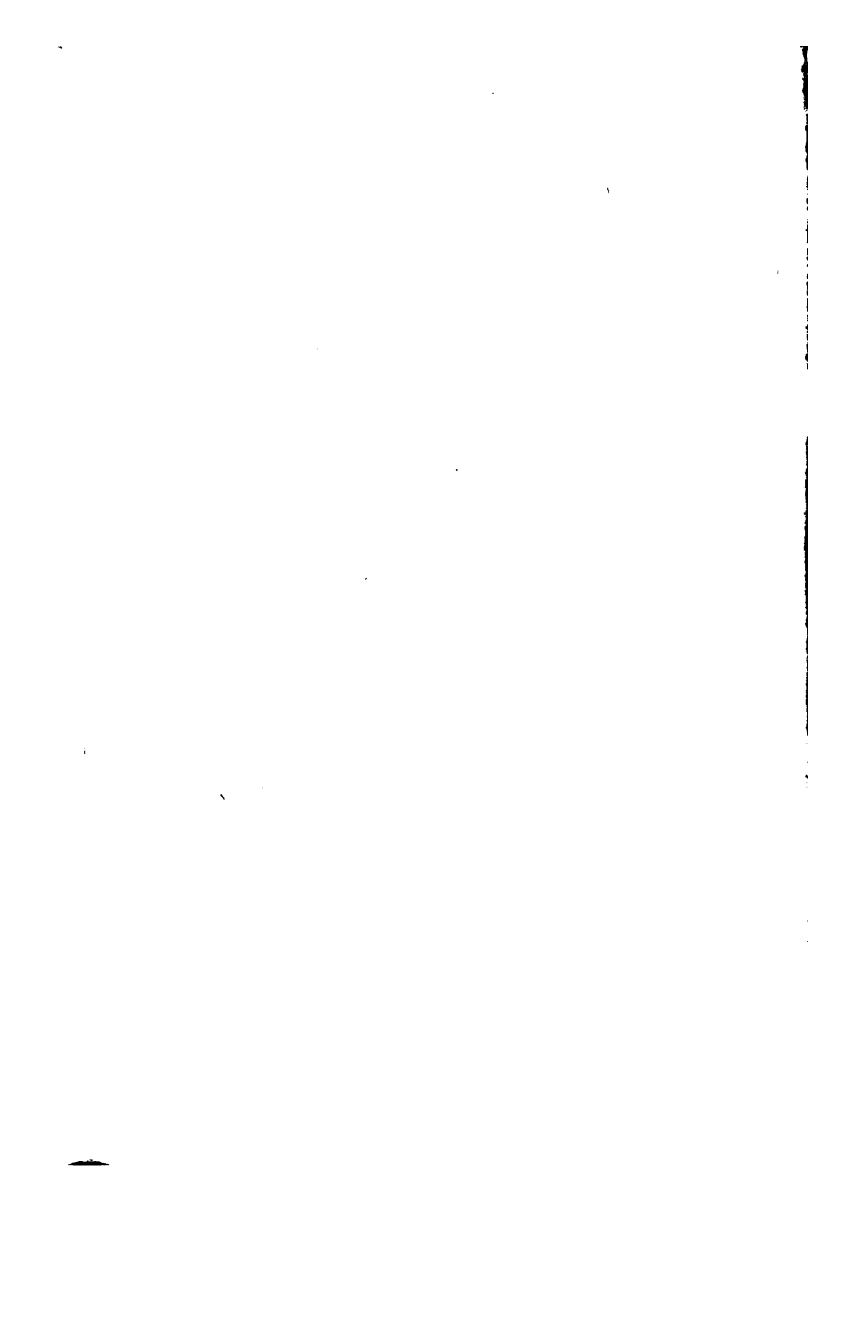
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THE
PROGRESS OF LOCOMOTION;

BEING

TWO LECTURES

ON THE

Advances made in Artificial Locomotion in Great Britain.

———"Progress has been made; the human race
Advances palpably in its career.
Old errors fail, and old truths seeming new,
Shine on the nations with a steadier light,
And point the way from sloughs of ignorance
To the firm ground where they must stand at last."

MACKAY'S "EGERIA."

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PREFACE.

THE following Lectures, designed for working men, are little more than a compilation from works of acknowledged merit. The writer acknowledges the assistance he has received from a very excellent little book, "The Silent Revolution," by Michael Angelo Garvey, LL.B.,*—a work very suggestive upon many topics to those who lecture to the working classes; also from a lecture (privately printed) by the Rev. G. Ashmead, of Great Missenden. Use has also been made of a learned series of papers, by F. W. Fairholt, F.S.A., which appeared, in the year 1847, in the *Art Union Journal*. The *Leisure Hour*, a useful weekly periodical, Knight's "London," and the Cyclopædia of the Society for Diffusing Useful Knowledge, have all been consulted and quoted with advantage. The Lectures are longer than is desirable; but it was thought better to err in this respect than to omit matter of interest. Lecturers using them as a help will do well to prune them with a free hand.

* Cash, London, 1852.

ON LOCOMOTION,

PUBLISHED BY

THE WORKING MEN'S EDUCATIONAL UNION,

Referred to in the Lecture thus [143].

No.

- 143.—**SAXON CHARIOTS**, called *wheel-beds*. *C.* Copied from illuminated Pentateuch, Cottonian Manuscripts, executed by Elfricus, Abbot of Malmsbury, tenth century. *D.* A similar carriage, copied by *Strutt*, from a Saxon illuminated Manuscript.
- 144.—**SAXON WAGGON AND LADY ON HORSEBACK**. *E.* Copied from Manuscript of the Abbot of Malmsbury; is intended to represent Jacob going into Egypt. *F.* Saxon lady on a side-saddle.
- 145.—**LADIES RIDING**. *I.* Ladies hunting on Horseback, astride; from the "Royal MSS." in the British Museum (15th century).
J. Lady on Pillion, from a drawing of the fifteenth century, in the Royal Library at Paris.
- 146.—**HORSE LITTER**, of the fourteenth century, from the Royal Manuscripts in the British Museum; represents removal of Queen Clothilde in her last illness.
- 147.—**STATE LITTER**; represents entry of Queen Isabella of France into Paris, in 1399 (from Froissart's Chronicles).
- 148.—**TRAVELLING WAGGON** of the fourteenth century; from an illuminated Psalter executed in 1345.
- 149.—**PACK-HORSES AND DRIVERS**.
- 150.—**COACHES**. *G.* Queen Elizabeth's State Coach; copied from an old print of the Queen setting out from the "Nonsuch" Palace to a hunting entertainment. *H.* Queen Elizabeth and attendants in State Coach.
- 151.—**COACHES**. *A.* Coach of 1616; from Visscher's View of London, published at Antwerp. *B.* Coach of 1696, from print in British Museum.
- 152.—**CARRIAGES**. Various. *K.* Carriage of reign of Queen Anne, from a print of a public procession in 1713. *L.* Carriage of the middle classes, 1750. *M.* Sedan-chair of the aristocracy, 1750. *N.* Stage-coach of same date.
- 153.—**MODERN STAGE-COACH**.
- 154.—**RAILWAY TRAIN**. Night.

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PROGRESS OF LOCOMOTION.

Lecture I.

HAVE you ever noticed that man, "the lord of creation," as he has been termed, to whom the brute creation has been subjected, is in many respects placed in a condition inferior to them as it regards physical capabilities? He cannot, unassisted by science, mount into the air like the bird, or cleave the sea with the denizens of the deep; he is at birth the most exposed, defenceless, and dependent of the creatures; his body is unprovided with protection from atmospheric inclemency, and those formidable weapons of self-defence supplied in some form or other to the other orders of the animal world; and when arrived at maturity, his physical power is less than that of most of the brutes; the lion, the elephant, and ox would lord it over him, did strength of body alone constitute power; and with regard to his senses, they are often less perfectly developed than those of the inferior animals—for example, the power of scent in the dog, or sight in the eagle tribe; and so as it respects power of *Locomotion*, man, in a state of nature, is decidedly inferior to many of the irrational creatures. While the Creator has endowed so insignificant a creature as the bee with the power of moving at the rate of seventy miles in the hour, and many of the feathered and finny tribes can change their place of abode and secure for themselves variety of climate by the rapidity of their migration, man, unless aided by art, wastes much time and strength in locomotion, and is much localized as regards his geographical position.

With all these disadvantages and restricted privileges, man has implanted within him strong feelings of curiosity and desire for research and discovery, and not only is this character bestowed upon him, but the injunction has been imposed upon him to subjugate the natural world to his use and profit, and to bring it under legitimate control.

These positions, at first sight, seem anomalous and irreconcilable, but they appear to me to furnish corroborative evidence that "there is a spirit in man," something conferring more power than mere physical strength or configuration, or development of the senses; affording more than compensation for any deficiency in these respects when compared with the inferior creation. God has bestowed upon man a body comparatively feeble, exposed, and defenceless, but an intelligence which has proved its superiority by the conquests it has achieved, the disadvantages it has overcome. Man, thus endowed, has become the most ubiquitous and locomotive of terrestrial creatures; he climbs the mountain or descends into its bowels, mounts into the air, traverses the earth's surface, crosses the ocean, and explores its depths; in fact, is a living, moving demonstration of the superiority of the intellectual and spiritual over the merely physical and material world.

The progress which man has been enabled to make towards extending his powers and facilities of locomotion, particularly as regards our own country, and the results springing from such extended powers of communication between man and man, constitute the subject of these Lectures.

Progress in these respects has been doubtless gradual; a float of ice or a drifting log, suggested perhaps the first idea of navigation, and a canoe hollowed out of the trunk of a tree was probably the first step in ship-building. And so with regard to locomotion on land; a tribe or family wending their way through forest or prairie, over mountain or along the banks of rivers, in search of fresh pastures, desirous of main-

taining intercourse with those they may have left behind, or of retracing their steps, if needful, would mark their "trail," which being traversed again and again, would become the first germ of a pathway through the wilderness.

Very early in the world's history man availed himself of the superior locomotive powers of the inferior animals. The first distinct mention of beasts of burden is in that most ancient of books, Genesis,* where he-asses, she-asses, and camels are mentioned as forming part of the possessions of Abraham. The monuments of Egypt and of Assyria also acquaint us that horses, asses, and camels were very early subjected to the locomotive uses of mankind. From the primitive *trail* or track in the wilderness would naturally be developed the *bridle-path*, when quadrupeds came into extensive use for purposes of transport; soon followed, doubtless, the use of simple *chariots* or *carriages* on two wheels, as is evident from the mention of Pharaoh's "chariots" and "waggons" in the time of Joseph,† and the representation of these carriages on the monuments of Egypt, the former drawn by horses and the latter by oxen. How soon, at what date, and in what country the simple two-wheeled cart or chariot was first improved upon, and became the double vehicle with four wheels, it would now be difficult to determine. *Sledges* were likewise used in ancient Egypt, chiefly for transporting the dead, as appears from the representations of funereal ceremonies upon the tombs of that country. Another method of transport likewise existed in the East from very early times, and is still extensively used there—I refer to the *palanquin* or *litter*, supported on horizontal poles, and borne either by men' or horses; that it was in use in the days of Solomon is evident from the reference to it in the book of Canticles, where the bridegroom is represented as travelling, surrounded by his guards, in his palanquin or state litter, which is infelicitously rendered "*bed*" in our English version.‡

To follow up the inquiry thus suggested, and to trace the

* Gen. xii. 16. † Gen. xli. 43; xlv. 19. ‡ Solomon's Song iii. 6—8.

progress of artificial locomotion through all its changes in the world, would be to undertake a task of no trifling magnitude, would require an acquaintance with the records of the past which few possess, and open a field for speculation inconveniently extensive; it is proposed therefore that we confine ourselves to tracing in outline the progress made in these respects in the British Islands, so far as the scanty records of the social condition of those islands enable us to find our way.

And here allow me to remark that the page of past history is so crowded with the acts of ambition, the triumphs of brute force, and the sickening details of mutual slaughter, that little room has been left to record aught of social condition or progress. The dawnings of a more enlightened literature are evident, wherein the doings of war, if they must be still recorded, will be thrust with shame into the background, while the triumphs of peaceful progress, of scientific achievement, and of Christian improvement will be brought more into view.

The early history of Britain is little more than fable, and our knowledge of its social condition is almost conjectural until the visit of Julius Cæsar, half a century before the Christian era. The natives of these islands were at that time little in advance of the savages of New Zealand, when those islands were recently discovered. As it regards artificial locomotion, however, they had made some progress; the Britons, particularly the southern tribes, met their enemies mounted on horseback, and in carts or chariots, managed with much dexterity, as the Roman writers affirm, which carts, like most of the war-chariots of ancient nations, being armed with scythes, extending laterally from the naves of the wheels, cut down and much disordered the ranks of the invaders. The Britons, being equestrians as well as charioteers, must have been furnished with roads of some sort, which was undoubtedly the case, although the Romans have

generally been complimented as the first road-makers in this country.

The lines of the British *trackways*, as they were termed, have been ascertained, although their more ancient names are in some cases merged in those given to the more recent Roman roads. A list of these trackways, whose courses, however, are involved in much doubt, may not be considered uninteresting. 1. The *Southern Watling Street* extended from Richborough, near Sandwich, in Kent, by London, Verulam (St. Albans), and Weedon, to Wellington and Wroxeter, thence to Holyhead and Anglesea. 2. The *Northern Watling Street*, entering from Scotland, at Chew Green, extended, by Manchester and Chester, also to Holyhead. 3. The *Ickineld Street*, from Yarmouth to the Land's End, Cornwall, by Royston, Dunstable, Chinnor, Streatley, Old Sarum, Exeter, and Totness. 4. *Rykineld Street*, from the Tyne, in Northumberland, to Boroughbridge, Birmingham, Gloucester, and Carmarthen. 5. The *Ermyrn Street*, from Berwick to Pevensey, in Sussex, by Doncaster, Stamford, and London. 6. The *Ikeman Street*, from the eastern coast of St. Davids. 7. The *Fossway*, from Lincolnshire, by Leicester, Cirencester, Bath, and Ilchester, to Seaton, in Devonshire, then a considerable port. 8. The *Saltway*, from Lincolnshire to Droitwich. There were doubtless other British roads, portions of which can be still traced in some cases, but respecting which no satisfactory evidence now remains.

You must not fall into the error of supposing that these roads in any degree resembled the present turnpike-roads. The greater part of the country at that period, and indeed for centuries afterwards, must have been much in the state in which unreclaimed land is now found in America.

“Rudely o’erspread with shadowy forests lay
Wide, trackless wastes, that never saw the day :
Rich fruitful plains, *now* waving with deep corn,
Frown’d rough and shaggy *then* with tangled thorn :
Through joyless heaths and valleys dark with woods,
Majestic rivers roll’d their useless floods.

Full oft the hunter check'd his ardent chase,
 Dreading the latent bog and green morass ;
 While, like a blasting mildew, wide were spread
 Blue thickening mists, in stagnant marshes bred."

The primitive roads, then, of which I speak, were merely tracks cleared through primeval forests, carried across the soundest parts of undrained bogs and fens, crossing the rivers where they were fordable, for bridges were almost unknown.

At the close of this period came the Roman occupation of the island and with it the introduction of *Roman roads*, in constructing which there is every reason to believe that the lines of the British trackways were not materially deviated from. The improvements introduced by the Romans consisted in carrying their roads, by the aid of masonry, over streams and ravines, by elevated causeways across low country, and in making their course more direct, continuing them in straight lines across hills and even mountains, which had been avoided by the more circuitous trackways; these roads were raised above the general level, bedded upon blocks of stone or chalk cemented together, or upon small stone or gravel mixed with lime, forming a sort of concrete.

Most of our leading highways follow, at this day, the course of these Roman "streets" or roads, and it is interesting to notice, in passing, that the chief deviations from their course consist in a return to the more circuitous, but less precipitous route originally adopted. The constructors of railways, on the other hand, have in modern times introduced again the more direct method of crossing the country, so that we find in the last nineteen centuries the following variations in practice:—

The ancient Britons, by a circuitous route, generally sought to avoid the hills,

The Romans crossed them in a direct line.*

* Interesting indications of the old and direct Roman roads, together with modern deviations, may be still traced; for instance, upon the coach-road from London to Arundel and Bognor, in Sussex. This road in ancient times

The modern road-makers again wound round the hills.

The railroad-makers cut and tunnelled through them.

Macaulay justly observes, "the Roman civilization, like the Roman sway, was of short duration in this country, and the slight impression it made was speedily effaced;" this remark cannot, however, be applied to the Roman road-making, which has, in some respects, even to the present day, ministered to the prosperity and progress of Britain. The benefits originally conferred on the country by this step in civilization must have been immense; it has ever been noticed in history, that the peace, and consequent progress, of any country has been difficult to secure so long as that country continued inaccessible by reason of defective roads; as an illustration of the truth of this remark, it will be remembered that it was the wise policy of the Government, after the rebellions in Scotland of 1715 and 1745, to follow up their suppression by the construction of good roads, which roads proved more effectual peace-makers than an army of occupation. Thus we may conclude that the Roman roads were mainly instrumental in bringing the strife of the Saxon chieftains to an end, healing the distractions of government under a heptarchy or an octarchy, uniting ultimately the whole country under one king. From the laws of Edward the Confessor, it is evident that the principal lines and roads were still those traced by the Romans; the chief highways continued to be *Watling Street*, the *Fosseway*, the *Ickineld*, and the *Ermyn Street*. This being the case six

formed part of the *Stane Street*, which connected Chichester with London; after passing south of Dorking and Ockley, to a point about twelve miles from the former town, and before reaching Slinfold, the road enters upon an undisturbed portion of the Roman route, which continues for ten miles, until it reaches Pulborough; this portion of road is so direct, that a perspective view of the whole length is said to be obtainable from the centre of the road-way. At the commencement and termination of this portion of road, the direction of the now disused Roman road is distinctly traceable, also its course across the South Downs, to a point in the present Chichester turnpike-road, about six miles from that town. At Bignor, a village at the north foot of the South Downs, in the line of this road, the foundations of a very extensive Roman villa, furnished with baths, and paved with beautiful tessellated work, was discovered early in the present century.

centuries after the Roman occupation, evidences the substantial nature of the works undertaken by that people.* The Romans never deemed a country thoroughly subdued till they had penetrated it with roads, so as to furnish a prompt communication between the most remote districts and the capital. They were thus able, without loss of time, to march their forces upon any point where their services were required.

In the later Saxon times, however, it would seem that the Roman roads were suffered to fall into neglect and disuse, whilst our ancestors took no trouble to construct others. The best of their highways were very rough and miry, and often impassable, from rains and floods. Many of them were mere bridle-tracks or even footpaths, and this state of thing continued till nearly the middle of the sixteenth century. Throughout this period, as in more ancient times, the surface of the country resembled that of some half-peopled island in the Southern Ocean ; it was overrun with timber, and great part of it covered with swamps and heaths. The forests were gloomy wildernesses, savage and impenetrable, where the fox and wild cat harboured securely, and the untamed bull roamed.†

We now arrive at what is called the early English period. A journey even of a few miles could not at this date be accomplished without the aid of guides, whose local knowledge might enable the traveller to avoid the dangers of treacherous morasses, and wind his way through intricate and tangled woods. In the year 1285, during the reign of Edward I., an

* The solidity of their construction, indeed, was fully equal to the boldness of their design ; a fact proved by the existence of many portions that have borne the traffic of nearly two thousand years without material injury. The strength of their pavements is illustrated by a fact related by a modern traveller, who states that the substratum of one still in use has been so completely washed away by water, without disturbing the surface, that a man may creep under the road from side to side, and yet carriages pass over the pavement as over a bridge.—*Vide Cyclopædia of Society for Diffusing Useful Knowledge*, art. "Road."

† *Silent Revolution*, pp. 28, 29.

act was passed "to clear the ground on the sides of all main roads for the width of 400 feet," and this, it would appear, was not so much for the improvement of the highway itself as that travellers might not be suddenly surprised by lurking banditti.* With this exception, the only attention paid by the legislature to the public ways amounted to an injunction to the neighbouring proprietors not to plough them up and enclose them as part of their own lands. In the reign of Henry VIII., however, the country began to emerge from its long-continued state of semi-barbarism, and the roads of particular districts were repaired by legislative enactment. The first of these had reference to the weald of Kent, and was passed in 1523; the preamble states that it was required "in consideration that many common ways in the said weald of Kent† be so deep and noyous by wearing and course of water and other occasions, that people cannot have their carriages or passages by horses upon the same, but to their great pains, peril, and jeopardy." Seven years after this the roads and bridges throughout England generally were in such a state that an act was passed, making the county responsible for the repair of the bridges, but leaving the roads to the parishes; as it was not, however, made binding upon any particular officer to call the parish together, and set the people to work, the roads were left to take care of themselves pretty much as before. Even the great thoroughfares to the metropolis were in winter little better than rivers of mud, diversified with deep break-neck gullies, whilst, in summer, they

* There are evident traces of the effect of this law in some parts of the country, where, for many miles together, the requisite space on each side of the road is still common land; this perhaps is most observable in the county of Hertford.

† The following extract is from a letter from Lord Chancellor Burleigh to the Earl of Shrewsbury, dated August 1573; when Queen Elizabeth was at "*Eridg, my L. of Burgeni's housse.—The Q. Majty hath had a hard begynning of a progress in the Weld of Kent; and namely in some pt of Sussex, wher suerly ar more wonderous rocks and valleys, and much worse ground than is in the Peek.*" The country so described is now the neighbourhood of Tonbridge Wells, near Erridge House, the seat of the Earl of Abergavenny, where the roads are now in the highest state of perfection.

became hollow and rugged ravines, choked with mountains of dust. In 1556, in the reign of Mary I., another general act was passed for the mending of highways, and surveyors were appointed, who were required yearly to set the common people of each parish to work upon the roads, "for six days in summer." This statute, we might suppose, would be more effective than that of Henry, but the surveyors (as we are told by Harrison, in his description of England, prefixed to Holinshed's Chronicle) abused their office to their own private ends, "eche surveior amending such bye plots and lanes as seem best for his own commoditie and more easie passage unto his fields and pastures."* The authority of these functionaries, too, was so vague and undefined, that the parishioners frequently evaded it altogether. In some places, moreover, there was such want of stones "as thereby the inhabitants were driven to seeke them furre off in other soiles;" and Harrison observes, that "the owners of the lands wherein these stones are to be had, and who, hitherto, have given money to have them borne awaie, doe now reape no small commoditie by raising the same to excessive prices, whereby their neighbours are driven to grievous charges, which is another cause wherefore the meaning of that good law is verie much defrauded." The people generally, however, were becoming sensible of their need of better, safer, and less tedious means of communication. Six acts were passed in the reign of Mary, and nineteen in that of Elizabeth, having reference to the highways; they were all founded on the principle of enforcing parochial labour for their repair.†

Some of the local acts of the reign of Henry VIII. amusingly illustrate the condition of the streets of London.‡ In 1533 an act was passed for paving the highway between St. Clement Danes in the Strand and Charing Cross, which is described in the preamble as "very noyous and foul, and in many places thereof very jeopardous to passengers, as well on horseback as on foot, both in winter and summer, by night

* Silent Revolution, pp. 29, 30.

† Ibid., p. 36.

‡ Ibid., p. 33.

and by day." The following year, another act was passed for the repaving of Holborn, which is described as the great thoroughfare from the west and north-west parts of the kingdom. The complaint of the residents, quoted in the preamble, states that "for lack of renewing of the said paving by the landlords which dwell not within the city, the way is so noxious and so full of sloughs and other incumbrances, that oftentimes many of your subjects riding through the said street and way be in jeopardy of hurt, and have almost perished." In 1540, we find another act for the paving and repair of the following thoroughfares :—"The highway leading from Aldgate to Whitechapel Church, the causeway from the bridge at Holborn Bars unto the end of Holborn westwards, as far as any habitation or dwelling is on both sides of the same street; Chancery Lane, from the bars besides the Rolls, late made and set up by the Lord Privy Seal, unto the said highway in Holborn; Gray's Inn Lane, from Holborn Bars northward as far as any habitation is there; Shoe Lane and Fewter (Fetter) Lane, thoroughfares and passages from Fleet Street into Holborn." The condition of all these places is thus described : "very foul and full of pits and sloughs, very perilous and noxious, as well for all the king's subjects through and by them repairing and passing, as well on horseback as on foot, as also with carriage."*

By the time of Charles II. the great increase of population and trade had rendered indispensable a more general and effective system for the repair and maintenance of highways than the old parochial plan, and *turnpike trusts* were accordingly established, by which commissioners were appointed for the construction and management of roads, and those who enjoyed the benefits of the improved mode of travelling were required to contribute to the expense by the payment of tolls levied at toll-gates, called turnpikes.† From this event may

* Silent Revolution, p. 34.

† The first turnpikes were established on the great north road in 1663, but the system did not become universal for nearly another century.

be dated the gradual improvement of all the main lines of communication throughout the country. The measure, however, was long unpopular, and it was not, as Macaulay tells us, "till the military had been called out, and much blood had been shed, that the law was generally submitted to."

Between the passing of this act and the present time 26,000 miles of turnpike-road have been laid down throughout Great Britain. For many years, however, the progress of this great work was extremely slow. The bye-ways, and many roads leading to and from towns, now places of wealth and importance, were for a long period unimproved, and continued as before, full of ruts and sloughs, and in many districts almost impassable. Some of them it was hardly possible, in the dusk of evening, "to distinguish from the unenclosed heath or fen, which lay on either side."* Often the mud lay deep on both right and left, and only a narrow track of firm ground rose above the quagmire. It happened almost daily that coaches stuck fast until a team could be brought from the nearest farm to extricate them from the slough. The tales of travellers were most lugubrious. One was detained four days at Stamford, from which place he only ventured in consequence of being taken into the company of fourteen members of the House of Commons, who were going to London in a body, with a retinue of guides and attendants. Pepys, the amusing author of the "Diary," and his wife lost their way in travelling from Newbury to Reading. In December, 1703, Charles III., king of Spain, on a visit to this country, slept at Petworth, in Sussex (the seat of the Duke of Somerset), on his way from Portsmouth to Windsor, and Prince George of Denmark (the husband of Queen Anne) went there to meet him. "We set out," says one of the attendants, "at six o'clock in the morning, and did not get out of the coaches, save only when we were overturned or stuck fast in the mire, till we arrived at our journey's end. 'Twas hard service for the prince to sit fourteen hours in the coach that

* Macaulay.

day without eating anything, and passing through the worst ways that I ever saw in my life. We were thrown but once, indeed, in going, but both our coach (which was the leading one) and his highness's body coach would have suffered very often if the nimble boors of Sussex had not frequently poised it, or supported it with their shoulders, from Godalming almost to Petworth; and the nearer we approached to the duke's house, the more inaccessible it seemed to be. The last nine miles of the way cost us six hours' time to conquer."* In 1740. Pennant states that it took six days to travel from Chester to London, and a team of six and sometimes eight horses to draw the stage-coach through the sloughs. Mr. Arthur Young, speaking of the Lancashire roads, tells us that the only mending they received was the occasional throwing in of large loose stones, which served no other purpose than to jolt passengers in the most intolerable manner. Some of the cross roads, or lanes, were of great length, embracing in their route many villages and market towns. One of them, running between lofty hedges, and under the shade of ancient trees, may to this day be traced so far as from the midland town of Northampton to the neighbourhood of the city of Gloucester (a distance of at least eighty miles), and is still much used by drovers for bringing their cattle to market, free of tolls, which they would of course pay upon the turnpike-roads.

The perils of the roads, however, until a comparatively recent period, were not merely those arising from mud and mire. Highway robbery, prevalent from the earliest times, continued to be of frequent occurrence till near the close of the last century. Mounted marauders were to be encountered on all the leading roads, and travellers, whether on horseback, in their own carriages, or by public conveyance, unless they were numerous and well armed, ran imminent risk of being stopped and plundered. The waste tracts lying on the great routes near London were especially haunted by

* Art Union Journal, p. 245.

these highwaymen; and Hounslow and Bagshot Heaths, Finchley Common, Gad's Hill, Epping Forest, were notorious as the most frequent scenes of their ruthless exploits. The absence of an efficient system of police, and the badness of the roads, made surprise easy and escape difficult. In early times, the unsettled state of society, and the habit of carrying large sums of money on the person (banks and bankers being then unknown), tended to promote this evil, which was, for many centuries, a truly formidable one to travellers. The thick forests were places of refuge for the plunderers, and indeed for outlaws and ruffians of every kind. The number of dangerous and disorderly persons who overspread the country in the Tudor period is astounding, and almost incredible. Lawless and more desperate than the Arabs or Tartars of the desert, they often united in bands, and attacked whole towns and villages, setting the authorities at defiance. The law was too feeble to reach these evil-doers, who, having declared war against society, sought and found in woodland fastnesses a refuge from its justice, whilst the makers of these laws sought to make amends for their weakness by the cruelty of their enactments. This state of things did not terminate till numerous roads and increased facilities for travelling perfected the communication between all parts of the country, and enabled the civil power to act with energy and promptitude. So recently as 1737, the notorious highwayman, "Dick Turpin," with his accomplice King, occupied a cave in Epping Forest, sufficiently large to contain themselves, their horses, provisions, arms, and booty. From this they issued in open day, robbed passengers, and attacked the residences of the neighbouring gentry. If little more than a century ago such things were, what must have been the perils of travellers in earlier times?*

Let us now turn from the roads to the *vehicles* used upon them. I have already shown you that the ancient Britons

* Silent Revolution, p. 90.

possessed chariots, but they were for purposes of war only. These chariots are described by Roman writers of that day—their number was immense. Cassibelaunus, the British prince who so vigorously opposed the invasion of Britain by Julius Cæsar, after disbanding his army, still retained 4000, and the use of them was universal amongst all the nations by whom our island was then inhabited. We have, of course, no pictures of these chariots. The first drawings we possess of carriages used in Britain are those of chariots in Saxon times.

The most common mode of travelling among our Saxon forefathers was on horseback, but the *chariot*, of which there were two sorts, was used by the sovereigns and nobility. So early as the time of the Heptarchy (when England was divided into seven kingdoms), we are told that one of the queens of Northumberland travelled from place to place in her chariot, but the first MSS. containing sketches of these vehicles are of a later date, after Egbert, king of the West Saxons, had united the seven kingdoms into one. Here is a diagram [143] representing the earliest of these carriages, sometimes called a *wheel-bed*, from its resemblance to a hammock. It consists, in fact, of a hammock suspended by two hooks fastened to upright posts, one at the front, and the other at the back of the carriage. Upon roads formed of blocks of stone, in bad repair, such a carriage must have been almost indispensable, until springs were invented. The drawings from which this diagram is taken were executed in the tenth century. Here is another drawing of the same date as the former, and was originally intended by the artist (Elfricus, Abbot of Malmesbury) to represent Jacob travelling into Egypt to his son Joseph [144 E]. In form this waggon resembled somewhat a farmer's cart. The preceding diagrams are taken from illuminations to Saxon MSS., and are exact copies; as works of art they will not stand the test of severe criticism, otherwise the nature of the animals drawing Joseph's waggon might be questioned, and inquiry suggested

as to what has become of the nether part of the traveller's body in the lower *wheel-bed*. The Saxon ladies, when on horseback, undoubtedly used side-saddles (although this has been questioned); their riding-whip, however, was of a different construction from the modern one, as you will see from this diagram [144 F].

In the reigns of the Plantagenets and Tudors, during what are called the middle ages, the almost universal mode of riding and travelling was on *horseback*. The nobility, the knights and the squires of this age of chivalry, were all accomplished horsemen; and the ladies, when journeying, either managed their steeds themselves, single handed, or rode behind their lords on *pillions* or otherwise. The way in which ladies in the fifteenth century rode both on saddles and on pillions may be seen in our next diagram [145]; the pillion is copied from a drawing of that period, in the Royal Library of Paris. It was a softly-cushioned low-backed chair, with a hanging shelf to support the feet, somewhat like the contrivances in which young children now take their first lessons in donkey-riding.*

Mr. Knight tells us, that when Katharine of Arragon came over in 1501 to marry Prince Arthur, a horse was provided for her conveyance from the Tower to St. Paul's, upon which she was "to ride with the pillion, behind a lord to be named by the king."† Queen Elizabeth herself, on public occasions, rode in this manner, behind the lord chancellor, through the streets of London. Sometimes, however, on occasions of state and ceremony, ladies of rank and wealth preferred the *horse-litter*, which was also employed to carry royal and noble invalids when too weak to mount the saddle. It was in such a carriage that Edward I. was carried towards Scotland, enfeebled by the illness which cost him his life; being somewhat recovered at Carlisle, he dedicated the litter in which he had travelled to the cathedral there, but setting forward on horseback, the journey overcame him, and he expired before reaching Scotland. The horse-litter shown in this

* Silent Revolution, p. 43,

† Knight, vol. i. p. 24.

diagram [146], is taken from a drawing of the fourteenth century, representing Clotilde, Queen of France, travelling, in her last illness, to the city of Tours, where she died. The litter was furnished with a bed and cushions, with curtains, as a protection from the weather, and was, as you see, borne by two horses, one before and one behind.* It must have been an uneasy, jolty vehicle, suitable only for level roads (of which there was then a plentiful lack), and short journeys; it could not be used for travelling the more difficult and rugged paths, without imminent risk to the necks of its occupants.† “When Margaret, daughter of Henry VII., set out for Scotland, she rode on a fair palfrey, but after her was conveyed by two footmen a very rich litter, borne by two fair coursers very nobly drest, in the which litter the said queen was borne, on the entering of the good towns, or otherwise, to her good pleasure.” Hall, the chronicler, thus describes the conveyance of poor Anne Boleyn to her coronation:—“Then came the queen in a litter of white cloth of gold, not covered nor bailed, which was led by two palfreys, clad in white damask down to the ground, head and all, led by her footmen. So she, with all her company and the mayor, rode forth to Temple Bar, which was newly painted and repaired, where stood also divers singing men and children, till she came to Westminster Hall, which was richly hanged with cloth of arras, and new glazed; and in the midst of the hall she was taken out of her litter.” This vehicle continued to be used on state occasions, to the time of Charles I.; but after that period, was employed almost exclusively by sick and infirm people of property and rank. The last mention we have of it is in an attack upon the republicans, written in the time of Charles II., which refers to an accident that befel Major-General Skippon, “who, coming in a horse-litter to London, when wounded, as he passed by the brewhouse near St. John Street, a fierce mastiff flew at one of the horses, and held him so fast that

* Art Union Journal, p. 118.

† Silent Revolution, p. 44.

the horse grew mad as a mad dog, the soldiers were so amazed that none had the wit to shoot the mastiff; but the horse-litter, borne between the two horses, tossed the major-general like a dog in a blanket."*

The ordinary *state litter* is seen in our next diagram [147], taken from an illumination in "Froissart's Chronicles," representing the entry of Queen Isabella of France into Paris, in June, 1399. Froissart says: "The litter of the queen was led by the dukes of Touraine and Bourbon at the head; the dukes of Berry and Burgundy were at the centre; and the Lord Peter de Navarre and the Count de Ostrevant behind the litter, which was open and beautifully ornamented; pages rode on the horses, whose trappings were emblazoned with the queen's arms."† "In London," says Mr. Knight, speaking of the fourteenth and fifteenth centuries, "no sound of wheels was heard but that of the cart labouring through the rutty ways, with its load of fire-wood or beer, or perhaps the king's pots and pans travelling from Westminster to Greenwich."

Those who were called by business or pleasure to travel long distances in London, which could not be reached by water-conveyance, rode on horses. All the records of early pageantry tell us of the magnificence of horsemen. Froissart saw the coronation of Henry IV., and thus describes the progress of the triumphant Bolingbroke through the city:—"And after dinner the duke departed from the Tower to Westminster, and rode all the way bareheaded; and about his neck the livery of France. He was accompanied with the prince his son, and six dukes, six earls, and eighteen barons; and in all, knights and squires, *nine hundred horse*. Then the king had on a short coat of cloth of gold, and he was mounted on a white courser, and the garter on his left leg. Thus the duke rode through London with a great number of lords, every lord's servant in his master's livery, all the burgesses and Lombard merchants in London, and every craft

* Knight's London, vol. i. pp. 24, 25.

† Art Union Journal, p. 120.

with their livery and device. Thus he was conveyed to Westminster. He was in number *six thousand horse*.”*

“By the ancient order of crowning the kings and queens of England, it is prescribed that the day before the coronation, the king should come from the Tower of London to his Palace at Westminster, through the midst of the city, mounted on a horse, handsomely habited, and bareheaded, in the sight of all the people. The citizens were familiar with these splendid equestrian processions from the earliest times to the era of coaches; and they hung their wooden houses with gay tapestry, and their wives and daughters sate, in their most costly dresses, in the balconies, whilst shouts of rejoicing rent the air.”†

In the fourteenth century, *travelling waggons* were sometimes used by persons of high rank; this diagram exhibits one of these conveyances [148]. It is drawn by five horses, with harness of rope of a primitive fashion. The vehicle contains coronetted dames, one of whom, seated in front, has a squirrel placed upon her shoulder, another behind receives a pet dog, apparently from a mounted horseman. A framework supports a tilt or awning, richly embroidered, a portion of which forms a moveable curtain to the side windows. We may notice, too, the panels on the sides, the sculptured heads at the ends of the beams which compose the framework, and the iron-bound chest underneath, faithfully guarded by the old English talbot, who trots beside it; the peculiar perspective of the period, showing both ends of the waggon at one view, has been faithfully retained by the artist. These carriages were well supplied, as they had need to be, with cushions and couches, being without springs.

The other wheeled vehicles in occasional use before the time of coaches were called by various names, as *chares*, *cars*, *caroches*, or *whirlicotes*, probably from some slight difference in their construction. Stow tells us that, in 1380, at

* Froissart's Chronicles.

† Knight's London, vol. i. p. 23.

the time of Wat Tyler's rebellion, the king, being threatened by the rebels, "rode from the Tower to Mile End, and with him his mother, because she was sick and weak, in a *whirligig* of old times." In the reign of Henry VI., the king, writing to the Archbishop of Canterbury, and other high functionaries, instructs them to provide for the use of the Queen-mother, Joan of Navarre, "two horses for two *chares*," and to "let her remove thence into whatever place within our realm that she list."* These *chares* or chariots were sometimes in request at coronations, though but rarely on other occasions, even by the nobility.

In the olden time, when shops were scarcely known, and the stalls which stood on either side of Cheap (Cheapside) resembled the booths at a modern fair, the majority of London retail tradesmen were itinerants, who paced the streets with baskets on their heads and arms, while provisions for the markets were mostly conveyed in boats along the highway of the Thames. It seems, however, that the two-wheeled cart was used in the streets of London, from a very early period, for the conveyance both of merchandise and household stuff. For when royalty or nobility (as Mr. Fairholt describes) "moved from place to place at this period, the army of attendants, and the quantity of carriages used for conveying household furniture and other things, rivalled the appearance of an Eastern caravan;"† and Harrison tells us that, "our princes and the nobility have their carriage commonly made by carts, whereby it cometh to passe, that when the Queen's majesty doth remove from place to place, there are usually 400 care-wares, which amount to the sum of 2400 horses, appointed out of the countries adjoining, whereby her carriage is conveyed safely unto the appointed place." Henry fifth Earl of Northumberland, when on a journey, appears, from his household book, to have been accompanied by no less than seventeen carriages, filled with every needful article of household furniture, it being

* Art Union Journal, pp. 119, 120.

† Ibid., p. 168.

usual then to carry from place to place things that are now always kept as part of the necessary furniture of every dwelling. In those times, however, the town house was unfurnished to make the country one habitable, and *vice versa*. Not only beds and tables, but pots, pans, and kitchen utensils were packed up, and brought at the fag-end of the procession, with the scullions and turnspits.

The four-wheeled waggon was an improvement on the two-wheeled carts; that in use by persons of distinction we have already seen.* But the transmission of goods and produce from one part of the country to another was effected by *packhorses* [149]. The author of the "Silent Revolution" thus describes them:†—"They were strong, hardy animals, capable of enduring much fatigue and privation, and were furnished each with two panniers, one of which hung at each side, so as to balance each other, from hooks fixed in a saddle that rested on the animal's back; a strong bent pole was sometimes passed under the horse's belly, and its ends fixed in the bottoms of the panniers, to keep them from pressing on the animal's sides. The panniers were then laden with the articles to be conveyed, and the horse thus equipped, and adorned with a bow and bells, set out with many others on his journey. They were united in strings, the halter of each being tied to the crupper of the preceding one, till the line terminated in the leader, which was, if possible, a stout, sagacious, old roadster, that knew the route by experience, and would not lead his followers astray into

* A privy seal of Queen Mary describes just such a waggon:—"One wagon of tymbre work for ladies and gentle women of our prevy chamber, with wheels and axletrees, strakes, nayles, clowtes, and all manner of work thertoo appertayninge, fine redde cloths to kevre and line the same wagon, fringed with redde sylke, and lyned with redde buckerum, paynted with redde colours; collers, drawghts of red lether, hamer clothes with our armes and badges of our coulours, and all other things appertayninge unto the same wagon."

† Silent Revolution, pp. 40, 41.

dangerous places ; these strings consisted of a dozen, twenty, fifty, and sometimes even a greater number of horses ; when very large, it was accompanied by several carriers, well armed, who rode beside the convoy on strong hacks. These carriers, in their habits and the duties they had to discharge, much resembled the Spanish muleteers, and, like them, were frequently intrusted with charges of great value. The cavalcade thus arranged proceeded at the rate of about two miles and a half per hour, winding its way, to the music of its innumerable bells, through pathless moors, tangled woods, and dangerous swamps, or climbing the rugged hill-sides at a still slower pace. They rested at night in well-known hostelries, and seldom accomplished more than from fifteen to twenty miles a day. They were frequently attacked and robbed by bands of armed plunderers, and, as a consequence of this, when a merchant in a remote district had goods of great value to transmit to a distance, he was often obliged to wait for weeks, and even months, until a caravan could be formed sufficiently numerous and well armed to bid defiance to the marauders, and do battle in case of an attack." Nearly all the internal traffic of the nation was carried on by packhorses, even for a long time after attention had been given to the improvement of the roads. It was not till about the beginning of the sixteenth century that the *stage-waggon* took the place of these loaded animals.

We come now to *coaches*. In the year 1564, William Boonen, a Dutchman (as Stow tells us), became Queen Elizabeth's coachman, and was the first that brought the use of coaches into England. "After a while, divers great ladies, with as great jealousy of the queen's displeasure, made them coaches, and rid in them up and down the country, to the great admiration of all the beholders ; but then, by little and little, they grew usuall among the nobilitie and others of sort, and within twenty years became a great

trade of coach-making."* The first nobleman who set up his coach was the Earl of Arundel, and the first made in this country was by one Walter Rippon, for the Earl of Rutland. These first coaches were huge, unwieldy structures of timber and iron (without glass windows), and resting on the axle without the intervention of springs, or any other contrivance to break the force of the tremendous bumps and shocks which the passengers had continually to encounter. Here is a diagram [150 G] representing Queen Elizabeth in her coach at a hunting, got up for her amusement, and is taken from an old print of the time, which is curious, as the first engraved representation of an English coach that we possess. "It reminds us, with its canopy and feathers, more of the triumphal chariots used in stage plays, than of a sober aid to locomotion. The body is low and heavy, and there is a clumsiness about the whole affair that we shall find common to all coaches until a comparatively modern period. The coachman (perhaps William Boonen himself) sits with Dutch solemnity in front, driving, or rather walking his horses by measured stately steps, the whole looking about as active as a modern hearse."* Another diagram represents a coach containing the queen's attendants [150 H]. The sides of this coach are perfectly open, but it is less fanciful in form; the back and front are closed, and the vehicle covered by an oblong canopy, at each corner of which balls, surmounted by spikes, are placed as ornaments. A similar decoration is

* Simultaneously with the introduction of coaches, *i. e.*, about the year 1568, came *post-horses* into use, relays of which, for the accommodation of travellers, began to be kept on the principal roads. They appear to have been first established at Norwich. No one was allowed to have them except by warrant from the Queen, the Duke of Norfolk, the Privy Council, or the Lord Mayor. The charge was twopence each mile, and sixpence for the guide. It was the suppression of monasteries which led directly to this change. The removal of those houses, used formerly for the accommodation of travellers, led to the establishment of inns upon the public roads; this, again, led to the establishment of the post-horse system.

* Art Union Journal, p. 158.

seen on the summit of the raised centre. In the middle of each side you will notice a projection, capable of holding one person, this was called the boot, and was generally a very inconvenient, uncomfortable seat. The driver of this carriage, unlike the queen's coachman, sits on one of the horses. This coach, though with less pretension, certainly has a more commodious and social look than the former. Clumsy as these coaches seem to us, they were long considered a royal and aristocratic luxury, and when their use by the wealthy citizens became general, it was regarded as dreadfully effeminate. The wits of the day directed their ridicule against the coaches; the London watermen, whose trade they injured, denounced them; the carmen ran foul of them; the mob hooted them; and in 1601, a bill was brought before Parliament "*to restrain the excessive use of coaches within this realm of England.*" It was alleged that they endangered life in the streets, that they encouraged idleness and luxury, impoverished the poor, and injured trade. The bill, however, was rejected, and coaches multiplied, notwithstanding all the efforts of their foes. Of these, one of the most notable was John Taylor, a Thames waterman, who could wield the goose feather with no less dexterity than he could "feather" an oar, dabbled in verse and prose as well as in the Thames, and was known as the "Water Poet." In a poem called the "Thief," published in the reign of James I., he tells us that—

"When Queen Elizabeth came to the crown,
A coach in England then was scarcely known."

Adding, that it is not becoming that—

"Fulsome madams, and new scurvy squires
Should jolt the streets in pomp, at their desires,
Like great triumphant Tamburlaines, each day,
Drawn with the pampered jades of Belgia.
That almost all the streets are choked outright,
Where men can hardly pass from morn till night,
Whilst watermen want work."

The Thames waterman had, indeed, been an important and

distinguished class in society. The river had hitherto been the great thoroughfare of London; its broad and cheerful aspect contrasted favourably with the gloomy narrow streets, and barges, boats, and wherries were in constant requisition for kings, nobles, and subjects of every degree. Those who kept no horses had no mode of conveyance but by boat, and those who did keep them were wont to prefer the smooth flowing river to the rutty miry lanes. Between Westminster and the Tower, "the north bank of the Thames was studded with the palaces of the nobles; and each palace had its landing-place, and its private retinue of barges and wherries. Nothing could then have been more picturesque than the Strand, with its broad gardens, lofty trees, and embattled turrets and pinnacles. In the beginning of the seventeenth century, the river was at the height of its glory, as the great thoroughfare of London. Howel maintains that the 'Thames hath not her fellow, if regard be had to those forests of masts which are perpetually upon her, the variety of smaller wooden bottoms plying up and down, the stately palaces that are built upon both sides of her banks so thick, which made divers foreign ambassadors affirm, that the most glorious sight in the world, take water and land together, was to come upon a high tide from Gravesend, and shoot the bridge to Westminster.' Of the smaller wooden bottoms, Stow computes that there were in his time as many as two thousand; and he states that there were *forty thousand* watermen upon the rolls of the Company, and that they could furnish *twenty thousand men* for the fleet. In this large number were doubtless included the private watermen of the court and the nobility,—still, the number of the public watermen must have been surprisingly great." * But, with the introduction of the coach, their glory began to wane, and their wrath was, not unnaturally, roused against the innovation. In 1623, John Taylor returned with renewed vigour to his attack on coaches, in a prose tract, entitled, "The World runs on

* Knight, vol i. p. 8.

Wheels, or Odds betwixt Carts and Coaches," dedicated ironically, "To the Sacred Society of Hackney-men" (hackney-coaches having just been set up); in this preface, he says, "I think, never such an impudent, proud, saucy intruder came into the world as a coach is, for it hath driven many honest families to all misdeeds, hospitality to extortion, plenty to famine, humility to pride, compassion to oppression, and all earthly goodness almost to utter confusion."

The following is a specimen of his argument:—"As man is the most noblest of all creatures, and all four-footed beasts are ordained for his use and service, so a cart is the emblem of a man, and a coach is the figure of a beast. For as man hath two legs, a cart hath two wheels; the coach being, in the like sense, the true resemblance of a beast, by which is parabolically demonstrated unto us that as much as men are superior to beasts, so much are honest and needful carts more nobly to be regarded and esteemed above needless and time-troubling coaches."* "I pray you," he adds, "look into the streets, and the chambers or lodgings in Fleet-street or the Strand, how they are pestered with them, especially after a mask or a play at the court, where even the very earthquakes and trembles, the casements shatter, tatter, and clatter, and such a confused noise is made, that a man can neither sleep, speak, hear, write, or cut his dinner or supper quiet for them. Butchers cannot pass with their cattle for them; market-folks which bring provisions are stopped, stayed, and hindered; carts or wains, with their necessary wares, are debarred and letted; the milkmaid's ware is often spilt in the dirt;" and then he describes how the proud mistresses, riding in these odious conveyances, grin at and deride the people, "crowded and shrouded up against stalls and shops."† No doubt these coaches were as great a calamity to John Taylor and his brethren of the oar as, in our times, the introduction of railroads has proved to coach-proprietors, postmasters, and postillions. All social improvements inflict

* Art Union Journal, p. 159.

† Knight, vol. i. pp. 12, 26.

temporary suffering on some particular class, in this imperfect state it must be so, and this diminishes somewhat of the pleasure with which we should otherwise regard these changes; but then the evil *is but* temporary, while the good remains, and "when we look back upon the past, we learn to estimate the evil and the good upon broad principles. Fifty years hence, a London without railroads, that inns and stages might be maintained, would appear as ludicrous a notion as a London without carriages, that John Taylor might row his wherry in prosperity, gladdened by the smiles of ladies, who, living near the Thames, were wont to take a boat and air themselves upon the water; and having no ground to complain that 'every Gill Turntripe, Mistress Fumkins, Madam Polecat, and my Lady Trash, Froth the Tapster, Bill the Tailor, Lavender the Broker, Whiff the Tobacco-seller, with their companion trugs, must be coached to St. Albans, Burntwood, Hockley-in-the-Hole, Croydon, Windsor, Uxbridge, and many other places.'" Mr. Knight observes that, "as in the diffusion of every other convenience or luxury introduced by the rich, the distinction of riding in a coach soon ceased to be a distinction. The proud Duke of Buckingham, seeing that coaches with two horses were used by all, and that the nobility had only the exclusive honour of four horses, set up a coach with *six*, and then the stout Earl of Northumberland established one with eight horses." *

This diagram [151 A] represents the coach of 1616 (in the reign of James I.), and another, [151 B], approximating in many respects to the more modern style, represents a carriage of 1696, in the reign of William III.

The perplexity of coach-travelling in the country in these days was truly ludicrous. If two carriages met on the high-road, neither, without great difficulty, could turn aside to let the other pass. The moveable axle was unknown, and, where the road was narrow, one coach was obliged to back to a wider portion of the way, where there was room enough to

* Knight, vol. i. pp. 13, 26.

let the other go by without tumbling into the ditch by the wayside. To meet these contingencies, the owners were obliged to retain a number of running footmen,—six, eight, and sometimes twelve attending the coach in its progress. Their duty was to run before and see that all was clear, warn off carts and horses, and explore all suspicious windings and narrow passes with rigid scrutiny. Each footman carried a stout pole, armed with an iron pike, by the help of which he cleared gulleys, sloughs, and rivulets, raised the wheels out of the deep ruts and hollows into which they continually sank, propped up the coach when it was in danger of over-setting, and when it was fairly capsized, righted it again, and assisted his masters or mistresses to recover themselves out of the mire. The gold-headed staves in the hands of our modern fashionable footmen are derived, doubtless, from the pole carried by these running footmen.*

A good idea may be formed of the condition of travelling about one hundred years since, from the following amusing dialogue, respecting the journey to London of a genteel family in their private carriage:—

“*Manly.* Honest John!

Moody. Measter Manly! I am glad I ha’ sun ye.—Well, and how d’ye do, measter?

Manly. I am glad to see you in London; I hope all the good family are well.

Moody. Thanks be praised, your honour, they are all in pretty good heart; thof’ we have had a power of crosses upo’ the road.

Manly. What has been the matter, John?

Moody. Why we came up in such a hurry, you mun think, that our tackle was not so tight as it should be.

Manly. Come tell us all—pray, how do they travel?

Moody. Why, i’ the awld coach, measter; and ‘cause my Lady loves to do things handsome, to be sure, she would have a couple of cart-horses clapt to the four old uns, that neighbours might see that

* *Silent Revolution*, pp. 46, 47.

she went up to London in her coach and six ; and so Giles Joulter, the ploughman, rides postillion.

Manly. And when do you expect them here, John ?

Moody. Why, we were in hopes to ha' come yesterday, an' it had no' been that th' awld weazle-belly horse tired : and then we were so cruelly loaden, that the two fore-wheels came down at once, in Waggon-rut-lane, and there we lost four hours 'fore we could set things to rights again.

Manly. So they bring all their baggage with the coach, then ?

Moody. Ay, ay, and good store on't there is. Why, my lady's gear alone were as much as filled four pormantel trunks, besides the great deal box that Ralph and the monkey sit upon behind.

Manly. Ha, ha, ha !—And, pray, how many are they within the coach ?

Moody. Why ther's my lady and his worship, and the younk' squoire, and Miss Jenny, and the fat lap-dog and my lady's maid Mrs. Handy, and Doll Tripe the cook, that's all—only Doll puked a little with riding backwards ; so they hoisted her into the coach-box, and then her stomach was easy.

Manly. Ha, ha, ha !

Moody. Then you mun think, measter, there was some stowage for the belly, as well as th' back too ; children are apt to be famish'd upo' the road ; so we had such cargoes of plum cake, and baskets of tongues and biscuits, and cheese, and cold boil'd beef—and then, in case of sickness, bottles of cherry-brandy, plague-water, sack, tent, and strong beer so plenty, as made th' awld coach crack again. Mercy upon them ! and send them all well to town, I say.

Manly. Ay, and well out on't again, John.

Moody. Measter ! you're a wise mon ! and for that matter, so am I—Whoam's whoam, I say : I am sure we ha' got but little good e'er sin' we turned our backs on't. Nothing but mischief ! some devil's trick or other plagued us aw th' day lung. Crack, goes one thing ! bawnce goes another ! Woa ! says Roger—Then, sowse ! we are all set fast in a slough. Whaw ! cries Miss : Scream ! go the maids ; and bawl just as thof' they were stuck. And so, mercy on us ! this was the trade from morning to night.

Manly. Ha, ha, ha !

Moody. But I mun hie me whoam; the coach will be coming every hour now.

Manly. Well, honest John—

Moody. Dear Measter Manly! the goodness of goodness bless and preserve you."

The nobleman's carriage was in due season followed by the *hackney-coach*, which was first seen in London about 1623 or 1625, and the first hackney-coach stand was established in 1634, by one Captain Baily, an old sea-officer; at the "Maypole," in the Strand. A letter of that time thus describes his proceedings:—"I cannot," says the writer, addressing the Earl of Stafford, "omit to mention any new thing that comes up amongst us; here is one Captain Baily, he has been a sea-captain, but now lives on the land about this city, where he tries experiments. He hath erected, according to his ability, some four hackney-coaches, put his men in livery, and appointed them to stand at the Maypole, in the Strand, giving them instructions at what rates to carry men into several parts of the town, where all day they may be had. Other hackney-men seeing this way, they flocked to the same place, and performed their journeys at the same rate. So that sometimes there is twenty of them together, which disperse up and down, that they and others are to be had everywhere, as watermen are to be had at the water-side. Every body is much pleased with it. For whereas before coaches could not be had but at great rates, now a man may have one much cheaper."* The following year it was represented to the king (Charles I.) by one Sir Sanders Duncombe, a traveller, that "in many parts beyond seas people are much carried in chairs that are covered, whereby few coaches are used among them," and prayed for a patent to introduce such vehicles into this country, to be let out for hire. Duncombe was patronised by the king's favourite, the Duke of Buckingham, and through his influence obtained the patent he re-

* Knight, vol. i. p. 27.

quested for fourteen years. Thus the hackney-coach was rivalled by the *sedan chair*, the patent expressly declaring "that the lives and limbs of his Majesty's subjects being greatly endangered by the multitude of coaches in London and Westminster, these conveyances would be a proper substitute."* It would seem that both the court and the nobility looked upon the hackney-coaches with feelings of dislike, and were rather anxious to supplant them by this new mode of conveyance. Sedans had been first seen in England some years before; for when Prince Charles (afterwards Charles I.) returned from his notable journey to Madrid, to woo the Infanta of Spain, he brought with him from that country *three*, of curious workmanship. Two of these he presented to Buckingham, who thereupon moved about the streets borne on men's shoulders, to the great indignation of the people, who, with great clamour, would rail on him as he rode, "loathing that men should be brought to as servile a condition as horses."† The sedans introduced by Sir Sanders Duncombe, however, were borne not upon the shoulders, but in the hand. These vehicles, like the first coaches, were viewed on their introduction with much disgust by the populace, and, though favoured by the aristocracy, had to encounter the hostility of the hackney-coach interest. In 1636 was published a tract, entitled "*Coach and Sedan pleasantly disputing for place and precedence, the Brewer's Cart being Moderator.*" But, notwithstanding all opposition and mutual rivalry, both these vehicles held joint possession of the streets for more than one hundred and fifty years. The wretched state of the pavement till the middle of the last century rendered carriage conveyance very disagreeable and unsafe, and the higher classes generally preferred the sedan. "In 1635 the king published a proclamation, in which he declares that the great number of hackney-coaches, and their general use in London and Westminster, were not only a great disturbance

* Art Union Journal, p. 159.

† Knight, vol. i. p. 28.

to his majesty, his dearest consort the queen, the nobility, and others of place and degree, in their passage through the streets, but the streets themselves were so pestered, and the pavements so broken up, that the common passages were hindered and made dangerous, and, besides, the prices of hay and provender made exceedingly dear,—‘wherefore,’ he concludes, ‘we expressly command that no hackney-coaches be used or suffered in London, Westminster, or the suburbs, except they be to travel at least three miles out of the same.’ So arbitrary and absurd an edict enables us to measure the distance between the sixteenth and the nineteenth century,—between English freedom as it existed before the civil wars and as it now exists.”* Royal opposition, however, could not put down the hackney-coaches. Charles II., too, tried his hand at their suppression, but without success; for in 1660 Pepys thus writes:—“Notwithstanding this is the first day of the king’s proclamation against hackney-coaches, yet I got one to carry me home.” The popular feeling was too strongly in favour of this convenience to yield to the wishes of the court. That which kings, with all their authority, could not accomplish, has in our day been brought about by time and fickle fortune; not a hackney-coach is now to be found.

The drivers of the first hackney-coaches sat upon a bar, or narrow seat, low behind the horses. But after the Restoration the driver was a postillion, with short whip and spurs, compelled to mount one of his horses, that he might more effectually manage his progress through the narrow streets; his coach, too, was a narrow one. After the fire of London, the streets were widened, and the coaches likewise; the latter “were closed all round, and covered with leather, ornamented with bright nails, and had red wheels;” the coachman, too, was restored to the dignity of a seat upon the carriage, for in the times of William III. and Anne we find him invariably on the box, which was covered with a hammer-cloth. This seat was really a box, and in it were contained a

* Art Union Journal, p. 159.

variety of articles, as a hammer (hence the name of the cloth), pincers, nails, screws, ropes, chisel, saw, and other appliances wherewith to repair the vehicle in case of accidents, which were constantly occurring; for, besides the hostility of carmen and the ordinary dangers of ruts and sloughs, deep holes and open vaults, unprotected by a railing, were often found with no light at night, to give warning of danger, but a farthing candle in a lantern. Gay thus describes an accident from this cause:—

“ Where a dim gleam the paly lanthorn throws
 O'er the mid pavement, heapy rubbish grows,
 Or arched vaults their gaping jaws extend,
 Or the dark caves to common-shores descend;
 Oft by the winds extinct the signal lies,
 Or smothered in the glimmering socket dies,
 Ere night has half rolled round her ebon throne;
 In the wide gulf the shattered coach o'erthrown,
 Sinks with the snorting steeds; the reins are broke,
 And from the crackling axle flies the spoke.”

The sedan was less dangerous, but it had its inconveniences. In those days the water-pipes from the roofs of houses discharged their contents neither into sewers nor rain-water butts, but upon the pavement; and Swift portrays the alarmed condition of a fop in one of these vehicles during a City shower:—

“ Boxed in a chair, the beau impatient sits,
 While spouts run clattering o'er the roof by fits;
 And ever and anon, with frightful din
 The leather sounds—he trembles from within.”*

The chairmen were sturdy independent fellows, who did pretty much as they pleased, and would not scruple to set down their fare, when opportunity offered, for indulgence in a pot of ale. Disputes amongst them for precedence were frequent, and when two chairs met on narrow footways, words

* Knight, vol. i. p. 30.

would often lead to blows. In "Mist's Journal" of Saturday, July 8, 1721, we are told that—"On Thursday se'nnight the Right Hon. the Lord Carteret, one of his Majesty's principal secretaries of state, passing through St. James's Square in a chair, was met by the Lady Harley in another, when a dispute arising between the footmen about giving the way, they immediately came to blows, and the chairmen and footmen being engaged with their poles and sticks, one of them struck his lordship as he was getting out of his chair; but whether accidentally or designedly, we know not. In the meantime that person is committed to Newgate, and three of his brethren are bound over to the next session." The public sedans were of plain leather, with brass nails. The chairmen, as a body, often influenced the elections for Westminster and Middlesex by the terror they produced with fist and bludgeon. The aristocracy often kept private sedans, which were furnished with crimson velvet cushions and damask curtains, and the chairmen strutted in all the finery of cocked hats and feathers, with embroidered coats and epaulettes.* This diagram [152 M] represents one of this kind of chairs, as used about 1750. Another [152 K] represents the kind of carriage used by the aristocracy in the reign of Anne, and is taken from a print representing the procession of both Houses of Parliament to St. Paul's, to return public thanksgiving for the peace of Utrecht. The carriage used on most occasions by the middle classes at this time is shown in the next diagram. It was drawn by one horse, and generally carried one person, or at most two, with a squeeze. It somewhat resembles the old-fashioned postchaise, except, that being without springs, it must have been much more uncomfortable [152 L].

Postchaises, or carriages for private hire in travelling, were introduced about 1734, by a Mr. John Tull, an artillery officer, who obtained a patent for their use. The plan succeeded, but brought no benefit to its projector, who died in a

* Knight, vol. i. pp. 30, 31.

state of destitution in the King's Bench Prison. * These conveyances became very popular, especially with those who, in travelling, preferred a carriage to themselves to the use of the more public vehicles; or on roads on which the coaches were but few. Post-horses had been earlier introduced, as before stated.

Stage-coaches were first started about the beginning of the reign of Charles II. Few of them had springs; the journey from London to Chester occupied six days; from London to Bristol four days; and to other places in proportion. The coaches did not travel by night, and the passengers were obliged to put up at the inns where the coachman and horses were accommodated, so that the expense of a journey was such as only the wealthy could afford. The Oxonians thought themselves wonderfully privileged when a coach ran between London and Oxford in two days, the passengers sleeping at Beaconsfield; but their astonishment was unbounded when, in the spring of 1669, it was announced that a vehicle, styled 'The Flying Coach,' would perform the whole journey between sunrise and sunset! We find, from the "Diary of a Yorkshire clergyman," that in 1582 a journey from Nottingham to London in a stage-coach occupied four whole days. We, who are used to railroads, look with astonishment on this state of things, and wonder how in those days people lived at all; but even this was an improvement on former modes of travelling,—especially on the broad-wheeled waggon, with its high tilt, long team, jingling bells, and pace of two miles per hour, which was long the only popular conveyance. In this vehicle, in the winter-time, persons of both sexes, all ages, and almost all conditions, were crowded together, and had to travel for long hours in succession, in total darkness, shaken and jostled together by the surging and jolting of the vehicle. The consequence of this was, that travelling was then very rare. Macaulay observes that "the country squire of the seventeenth century did not visit London three times in his life,

and when he presented himself in Fleet-street, was as easily distinguished from the denizens of the place as a Turk or Lascar; and if the cockney appeared in a country village, he was as great a wonder as he would have been in the tent of an Arab, or the kraal of the Hottentot." Town and country, and the different districts of the latter, were then as widely separated from each other, for all practical purposes, as are now the different quarters of the globe. People generally, of almost all ranks, lived and died on or near the spot where they were born. The several districts often differed as widely from each other in habits, manners, and dialect as the German States do from one another in the present day.* Edinburgh was as remote from London as now are Boston and New York; and poor persons, living in different parts of England, were more completely separated from one another than the settler in Australia is now from his friends in this country, though separated by half the circumference of the globe.

The introduction of stage-coaches, like all other improvements, met at first with determined opposition. Instead of being alive to the advantages which must accrue to all classes from increased facilities of locomotion, the wiseacres of that day regarded the innovation as fraught with danger, and tending to the ruin of the nation. A pamphlet was published in 1673, called "*The Grand Concern of England explained in several Proposals*," wherein the author attributes the dullness of trade and the embarrassment of the country to the stage-coaches. He complains that they perform the journey from London to York, Chester, and Exeter, in the unpatriotically short space of four or five days, carrying eighteen passengers each. He then calculates the vast amount of employment those eighteen persons would give to grooms, farriers, innkeepers, hostlers, saddlers, etc., if each were to ride his own horse, instead of adopting the *revolutionary* practice of clubbing for a common conveyance.† "When

* Silent Revolution, p. 56.

† Ibid., p. 50.

gentlemen travelled on horseback," says he, "they wanted boots, spurs, saddles, saddlecloths, bridles, pistols, and holsters; they required a riding-dress; found it necessary to carry a change of suits with them, the one they travelled in soon became soiled and unfit for wear at the end of their journey, and often in the course of two journeys altogether spoiled; whereas those who travelled by coach could proceed on their journey ready dressed." All these circumstances, which were to the traveller himself so many reasons why he *should* go by coach, were, by this eminently conservative member of society, propounded to the legislature as so many reasons why he *should not* be allowed to journey in this manner; for he concludes by advising Parliament to interfere to suppress stage-coaches, especially those within fifty or sixty miles of London, and recommends the others being obliged to travel with one set of horses, and to be limited to thirty miles in summer, and twenty-five in winter per diem! The legislature, however, was too wise to adopt the recommendation of this "slow coach," and the obvious advantages of the new mode of travelling—rude as we should now consider it—gradually overcame all opposition. This diagram [152 N] represents a stage-coach of the year 1750. "The heavy *boot* in front, and the equally clumsy coachman, buried beneath his coat and apron; the overloaded top, upon which the cheap traveller reclines in as precarious a position as possible; the *basket* behind, in which travellers sit as they best can, and from which hang trunks and packages of every form and size, render the stories of slow travelling in those days perfectly credible, however monstrous they appear to us now."* Some of the anecdotes of these early stage-coaches are amusing enough. A gentleman writing to his father, in 1673, says,—"I got to London on Saturday last. My journey was noe ways pleasant, being forced to ride in the boot all the way: y^e company y^t came up with me were persons of great qualitie, as knights and

* Art Union Journal, p. 247.

ladies. My journey's expense was thirty shillings. This travel hath so indisposed me y^e I am resolved never to ride up again in y^e coach." At this time so formidable an affair was reckoned even a journey from Birmingham to London, that a departure was a signal for making a will, followed by a solemn farewell of wife, children, and household. Slow travelling, indeed, continued to a much later period than we might suppose; and we read advertisements for "that remarkable swift-travelling coach, the '*Fly*,' which leaves Birmingham on *Mondays*, and reaches London on the *Thursday following*." Another advertisement just a hundred years old, bearing date 1753, is taken from an old magazine:—

"This is to give notice to all gentlemen and others, that the Colchester machine sets out from the White Hart Inn, in Colchester, every Monday and Thursday, to the King's Arms Inn, in Leadenhall-street, London, and returns to the place aforesaid every Tuesday and Friday, at twelve shillings a passenger; to be allowed twenty pounds weight, and all above to be paid one penny a pound, to be paid for at Ingatestone: and all outside passengers to pay six shillings a passenger. To set out at six o'clock in the summer and seven in the winter. N.B.—Witham and Kelvedon passengers to pay ten shillings with inside, and five without; and to set out on Monday, the 26th of June. Performed, if God permit, by us, Wm. Wood, Wm. Reynolds, Tho. Cant, Wm. Webb."

Now, there are five trains *to* and seven *from* Colchester every day, and the time occupied in the journey is from two to two and a half hours *only*.

A characteristic account of a stage-coach journey from London to Chester, by Dean Swift, will afford illustration of the discomfort attending travelling in a public conveyance little more than one hundred years ago:—

"Resolv'd to visit a far-distant friend,
A porter to the Bull-and-Gate I send,
And bid the man, at all events, engage
Some place or other in the *Chester* stage.
The man returns—'tis done as soon as said,
'Your Honor's sure when once the money's paid;
My brother whip, impatient of delay,
Puts to at three, and swears he cannot stay;
(Four diamal hours ere the break of day.)

Roused from sound sleep—thrice called—at length I rise,
 Yawning, stretch out my arms, half close my eyes :
 By steps and lanthorn enter the machine,
 And take my place, how cordially ! between
 Two aged matrons of excessive bulk,
 To mend the matter, too, of meaner folk ;
 While in like mood, jamm'd in on t'other side,
 A bullying captain and a fair one ride ;
 Foolish as fair, and in whose lap a boy—
Our plague eternal, but *her* only joy ;
 At last, the glorious number to complete,
 Steps in my landlord for that bodkin seat :
 When soon by ev'ry hillock, rut, and stone,
 Into each other's faces by turns we're thrown ;
 This grannam scolds, that coughs, the captain swears,
 The fair one screams, and has a thousand fears ;
 While our plump landlord, trained in other lore,
 Slumbers at ease, nor yet ashamed to snore ;
 And Master Dicky, on his mother's lap,
 Squalling brings up at once three meals of pap.
 Sweet company !—next time, I do protest, sir,
I'll walk to Dublin ere I ride to Chester." /

The coach of 1750 may be considered as the last and most approved of the old-fashioned coaches. The heavy, clumsy, formal style, which to that time had prevailed, was soon after driven out by vehicles of a lighter construction, more adapted for comfort and convenience, as well as far more elegant in look. But as the introduction of these ushers in a new era in the history of coaching, I shall reserve any notice of them for my next lecture.

We have together traced the progress of locomotion in our own country from the earliest times to a century ago, have glanced at the great changes that transpired during that lengthened period. The ancient British and Roman roads, the footways, bridle-paths, and miry lanes of the middle ages, have passed in review before us ; we have witnessed the introduction of turnpikes and turnpike-roads. We have observed the universal use of the saddle-horse in the days of chivalry, and the employment of the horse-litter for occasions of state,

or by the wealthy or infirm. For the conveyance of goods and merchandize we have seen the packhorse give way to the stage-waggon; have noted the extinction of the ancient chariots, and the first appearance of the coach in England. We have reviewed this vehicle in its various forms,—as the luxury of the noble and rich, supplanting the showy cars and gilded barges of the olden time; as a conveyance in general use, destroying the trade and exciting the hostility of the Thames watermen; as the hackney-carriage, vainly rousing the opposition of courts and princes; as it contended with the sedan for popular support; and as the stage-coach and postchaise, gradually superseding the ancient mode of travelling on horseback. In our next lecture I propose referring to the various improvements of the coach in its several varieties since 1750, the construction of canals for inland navigation, the first appearance in London of the omnibus and cab, and the introduction of the railway system and locomotion by steam; all tending to show the immense and rapid progress of facilities for locomotion made within the last hundred years, and the high position to which, in these respects, this country has now attained.

There is no subject from which we cannot extract useful teaching and moral lessons; the progress made in artificial locomotion forms no exception to this rule. Much, however, of the improvement to be derived from this subject I must leave until the close of the next lecture. You will have noticed the unthinking, unreasoning prejudice which has been invariably excited by the introduction of every improvement in travelling, and the opposition with which every new invention has had to contend. Coaches, hackney and stage carriages, and railways (as you will learn in the next lecture) were all in their turn the subjects of ridicule, and were to have been the instruments for effecting the ruin of the country; yet the country survives, aye, and flourishes too, notwithstanding.

Let us be careful, then, not to despise that which is *new* merely because it is *novel*, but as reasoning beings let us endeavour to discover whether it is *good*, and to act towards it accordingly. It does not, of course, follow that every novelty is to be desired, but it is certain that many new discoveries, novel appliances of the arts, or advances in social life, are useful and beneficial, conducing to the moral and social well-being of mankind. Our study, then, should be to discard passion and prejudice, and calmly to investigate each new thing that claims our attention; and as in all matters of minor importance attaching merely to the things of this life, so also in regard to those infinitely important considerations which belong to the life to come, we should resort to the sound and truly philosophical rule laid down for us in Scripture—"PROVE ALL THINGS; HOLD FAST THAT WHICH IS GOOD."

Lecture III.

IN my last lecture I endeavoured to trace the progress of improvement in relation to artificial locomotion, from the time of the Roman occupation of this country until about a century ago—say to the year 1750—comprising a period of about eighteen centuries.

You will have noticed that during that protracted period very little progress to boast of had been made in our travelling facilities. Coaching, under the most favourable circumstances, was still tedious, uncertain, comfortless, and even dangerous, while to the lower classes of society it continued a luxury quite unattainable, if, indeed, a *luxury* such travelling could be termed.

About the middle of the last century, however, a new era commenced in these respects, and it may be said, without fear of contradiction, that the century which has since elapsed has witnessed greater changes, more decided progress and improvement, than did the eighteen preceding centuries.

About the year 1750 a lighter style of coach-building came into vogue, and many novelties in the carriage line were soon introduced. It will be impossible, and indeed out of place, for me to detail all the particulars of these experiments in carriage construction—suffice it to say, that their forms were “legion;” the names of *barouche*, *landau*, *landaulet*, and *phaeton* (amongst four-wheel vehicles), and *dennett*, *buggy*, *whiskey*, *tilbury*, and *stanhope* (amongst two-wheel carriages), will suggest general ideas of the various changes in form introduced, as most of them are known to you, and continue in use to this day.*

* Those who wish to pursue this subject, may consult “The History of Pleasure Carriages,” by W. B. Adams.

So much for pleasure-carriages. I must now request your attention to the consideration of *stage-coach travelling*.

Even so late as 1760, the journey from Edinburgh to London occupied eighteen days, a part of the road being inaccessible to wheeled conveyances. Indeed, on the border territories between England and Scotland, the country, we are told, "was a complete wilderness," its geography very little known, and its inhabitants continually exposed to the attacks of robbers; so that, after the accession of George III., "the judges, barristers, attorneys, clerks, suitors, witnesses, and tipstaffs, when on circuit, were obliged to travel together on horseback to the assizes at Carlisle, carrying their own provisions, and escorted by a strong body of soldiers, with the sheriff at its head."* The state of the Border-land, as thus described, could hardly have been worse in the old days of feudal warfare, of Scottish raids and English reprisals,—the days of Bruce and Baliol, and of our first Edward, of the Percys and Douglasses, and the woful hunting of Chevy Chase.

Next to the general improvement of roads by the turnpike system, the invention of springs greatly increased the comfort and accelerated the speed of the stage-coach, in fact, before this invention, "a man's power of endurance were the limits of his journey." It was impossible to travel *fast*, on account of the dragging weight of the vehicle; it was equally impossible to travel long distances at once, since no one could long bear the direct and unmitigated jar.† It was not, however, till the beginning of the present century that progress in the art of locomotion made rapid strides. Then it was that coaching became almost a science: improvement succeeded to improvement; horses of a higher breed and swifter pace were introduced; the relays upon the route were more numerous; and road-making, as an art, advanced almost to perfection, till at length the old rate of five or six miles an hour was exchanged for one of twelve or fourteen. The

* Silent Revolution, p. 88.

† Penny Cyclopædia, art. *Coach*.

improvements between 1800 and 1830 far exceeded all that had obtained in the previous century.

At the latter date, about fifty stages passed daily to and fro between London and Brighton, and performed the journey (one of fifty-two miles), on an average, in from four to four hours and a half; Derby, a distance of 126 miles, was reached in fourteen hours; Manchester (187 miles), by the mail, in nineteen hours; Liverpool (203 miles), also by the mail, in twenty-one hours; and Holyhead (261 miles), by the same conveyance, in twenty-seven hours. It thus appears that the general speed of these vehicles (stoppages included), was between nine and ten miles per hour, their actual rate when travelling being about twelve miles, and that of the fastest Brighton coaches fourteen. These last were indeed splendid machines, well appointed in all respects, and were long and justly admired as the very *ne plus ultra* of stage-coaches—the pride and glory of the road. Men of rank and fashion, skilled in horsemanship, not unfrequently aspired to drive them, and would mount the box almost daily for weeks and months together; play their part consistently, and take the usual fee from passengers, touching the hat in return, with the air of a professional whip rather than of an amateur.

Mail-coaches, which, on the majority of English roads, were the most rapid and the best in all respects, were first started, at the suggestion of a Mr. Palmer, in 1784. Previous to that time the mails were conveyed on horseback and in carts; the service was most irregularly and inefficiently performed, and the rate of travelling did not often exceed four miles per hour. The singular discrepancy between the speed of the post and of stage-coaches first attracted the attention of Mr. Palmer. “Letters which left Bath on Monday night were not delivered in London till two or three o’clock on Wednesday afternoon, and sometimes later, but the coach which left Bath on Monday afternoon, arrived in London soon enough for the delivery of parcels by ten o’clock the next morning;

and though the postage from Bath to London was at that time only threepence, yet dispatch was in many cases of such importance, that the Bath tradesmen willingly paid two shillings to send their letters to London in a coach parcel, besides requesting their correspondents to give a gratuity to the porter for the early delivery of the packet, this request for additional payment forming part of the direction. The post which left London on Monday night, or rather on Tuesday morning, from one to three, did not reach Norwich, Worcester, or Birmingham, till Wednesday morning, and the Exeter post not until Thursday morning, while letters were five days in passing from London to Glasgow." Mr. Palmer proposed to Mr. Pitt (the then Premier) that the letters should thenceforth be transported not on horseback or in light carts, but by coaches, and that, as robberies of the mail were so frequent, a man with fire-arms should travel with each coach. These coaches were all to start from London at the same hour, and from the country at such times as to ensure, so far as possible, their simultaneous arrival in town at an early hour in the morning.

The first mail-coach upon Mr. Palmer's plan left London for Bristol on the evening of the 24th August, 1784. These improvements met with much opposition from some of the Post-office authorities. One of them, a Mr. Hodgson, "did not see why the post should be the swiftest conveyance in England, and conceived that to bring the Bristol mail to London in sixteen or eighteen hours *was a scheme altogether visionary*." Another gentleman (Mr. Draper) declared that the post "cannot travel with the same expedition as chaises and diligences, on account of the business necessary to be done in each town," and that the quarter of an hour in each post town which Mr. Palmer proposed to allow would be insufficient, as half an hour would be required in many places. The idea, too, of a guard to each coach, so far from ensuring safety, would only occasion the crime of murder to be added to that of robbery, since, "when desperate fellows had once

determined upon a mail robbery, the consequence would be murder, in case of resistance. Timing the arrival and departure of the coaches would "fling the whole commercial correspondence of the country into the utmost confusion." Even the Postmasters-General addressed the Lords of the Treasury, after Mr. Palmer's plans had been partially in operation for eighteen months, stating that they felt "perfectly satisfied that the revenue had been very considerably decreased by the plan of mail-coaches." Happily, however, the Premier saw more clearly the advantages of increased safety, and of more frequent, rapid, and certain facilities of communication, and he resolved that the scheme should be carried out in all its most essential features. The results were, that by 1797 the greater part of the mails were conveyed in one-half the previous time, in many cases in one-third, and in some of the cross posts in one-fourth of the previous time. Daily posts were established to above five hundred places, which before had only received them thrice a week. The great commercial towns were thought to be as much entitled to this advantage as the water-drinkers at Tunbridge Wells thirty years before; and the revenue of the Post-office increased beyond anticipation."

"The era of mail-coaches embraces about half a century; their origin, maturity, and perfection, and their gradual displacement by the railways, all took place within that short period. In 1836 there were fifty-four four-horse mails in England, thirty in Ireland, and ten in Scotland. The number of pair-horse mails in England was forty-nine. Their average speed in England was nine miles, all but a furlong, per hour, including stoppages. Starting from London at eight o'clock in the evening, the mail reached Exeter, 170 miles, in sixteen hours thirty-four minutes; Glasgow, 396 miles, in forty-two hours; Edinburgh, 399 miles, in forty-two hours and a half. The number of miles travelled by the mails in England and Scotland in 1838 *was above seven millions, equal to a circuit round the globe, every day in the year.* The English mail-coach was strongly characteristic of the

national energy and spirit, and also of the national taste. The 'nightly' departure of the mail-coaches from the Post-office was always a favourite sight. A short time before the hour of starting, they arrived in the yard round the Post-office from their respective inns, with the passengers already in their places. Through the iron-railing, by the light of gas-lamps, the public could see the process of packing the mail-bags. It was really a fine sight to see twenty of these vehicles drawn up, each occupying the same station night after night, the horses fine and spirited animals, the harness neat, and the coachmen and guards wearing the royal livery. As the clock struck eight, the Post-office porters dragged out huge bags, of which the guards of the different mails took charge. Each coach, one by one, passed out of the yard, and the sound of the guard's horn became lost in the noise of the streets. About six of the mails on the western roads did not take up their bags at the Post-office, but started from the western end of Piccadilly. The annual procession of the mail-coaches on the king's birthday was also an exhilarating and pleasing sight, which will never again be witnessed." It "proceeded from the City to the West-end, through Hyde Park, and usually passed before the residence of the Post-master-General."*

A well-appointed four-horse coach, rattling at full speed through the streets of a market-town, or dashing along on the broad turnpike in the open country, with its fleet and spirited horses, its roof covered with eager travellers, the driver the impersonation of high health and good humour, and the guard performing cheerily on his sounding horn,—the whole seeming the very emblem of life and enjoyment,—was indeed a pleasant, blithesome sight, which daily, for many long years, gladdened the eyes of the inhabitants of our rural villages and country towns [153].

Those days may be said to have passed away, never to return, for the "long coaches," in almost all the districts of

* Knight, vol. iii. pp. 277—279.

England, have been supplanted by the superior advantages and competition of the *railway*. In Wales and Scotland they still linger, for in those parts of Britain railway enterprise has not yet attained its full development; but south of the Tweed and east of the Severn we now seldom see any coaches but those that run short distances from stations to towns not yet favoured with "a line," and the vehicles appointed for this purpose are seldom such as to raise in our minds any lively recollections of the past. Some persons, especially when recalling to their thoughts the perfection to which stage-coach travelling had attained, may regret the bygone glories of those former days, the agreeable excitement produced by the thought of a journey in fine weather, and the many pleasures to be found and enjoyed upon the road; may

"Miss the cantering team, the winding way,
The road-side halt, the post-horn's well known air,
The inns, the gaging towns, and all the landscape fair."

And undoubtedly there were many gratifications in the old mode of journeying, which the modern traveller must now forego. Yet, apart from the great saving of time, and independently of that satisfaction at the change which all must feel who rightly estimate the importance, on every moral and social ground, of increased facilities for locomotion, there is, unquestionably, when the *merely physical* advantages and comforts of each mode are weighed against each other, a decided balance in favour of the more modern system.

The miseries of the old mode of travelling and the favourable contrast afforded by the new are thus amusingly described by a modern writer:—"The only two journeys I ever took in my life were the journey from London to Exeter, which I made forty years ago, and the journey back again, which took place not a fortnight since. In the autumn of 1811 I left my father and mother to accompany my master, to whom I had been apprenticed and his numerous family,

* Leisure Hour, August 18, 1853.

to London. He had engaged the whole interior of a double-bodied stage-coach for himself and family, twelve persons in all, including a maid-servant and myself. It was between two and three in the afternoon when the ponderous vehicle began to move from the market-place. The horn blew ; the six stout horses pawed and grappled, and we got under way, soon increasing our velocity to five or six miles an hour ; and rattling out of the town with a noise and din that brought everybody to their doors. The excitement soon banished the grief I had felt at parting with my friends, and I began to enjoy the pleasures of the journey ; but when we had got a few miles out, the pleasant rapidity of our passage became modified. Macadam had done nothing for the roads, and our way lay through a hilly country, upon a track of kneaded moist earth, which our broad wheels brought up in masses, and tossed into the air by shovelfuls. We changed horses every seven or eight miles, and were too glad, on every occasion, after the first, to get out and stretch our legs with a walk, *and count our bruises*. We passed through Taunton shortly before sunset, and soon after, when darkness came upon us rather suddenly, owing to the setting-in of rain, the pleasures of the transit disappeared and its woes commenced. The children (after supper) had dropped off to sleep, but they were speedily jerked into wakefulness by a jolt that nearly sent my head through the panels, the coach having suddenly fallen into a rut a foot deep, upon the edge of which it had been rolling for some time. This occurred ten times in the course of an hour. It was too dark for the driver to see the track, and in consequence he was continually getting out of it and falling in again. The result of this was a terrible state of confusion. The packages were started in every direction, and tokens of serious damage were audible in the clinking of broken glass and the gurgling sound of escaping liquids. Amid the squalling of the frightened children, the grinding of the wheels, the thumping together of the lumbering boxes, and the noise in my own head, resulting from its

involuntary contact with the sides of the coach, I heard the voice of my mistress crying, 'There is the brandy-bottle broken, feel for it and try if you can save some.' I began groping about in the dark for the bottle, I could find none, but I felt a child's naked leg at the bottom of the coach, and with difficulty pulled out young Sammy, who, for aught I know, might have been smothered but for the information of the broken bottle." The writer then describes the difficulty they had in procuring a light from an old-fashioned tinder-box; how the brandy had saturated the children's buns, and made one of them nearly tipsy; how his master bought candles at the next stage, that they might burn a light all the night; and how they half slept and jolted on, till he was awakened about six by the roaring and crashing of the wheels, when, looking out, he found the coach was mounting a hill, and ploughing through a mass of round gravelly pebbles, as big as a boy's fist, lying six inches deep upon the road. "Every now and then the horses stood still to recover strength, and had to be lashed and cheered into action ere they would renew the attempt, although an additional pair, under the charge of a postillion, had been brought to assist in surmounting the ascent. The coachman, finding we were awake, requested that as many as could would alight and walk up the hill. The outside passengers were already far in advance, the insiders were glad enough to follow their example; I marched on, happy to be released for a time from the sweltering prison. The hill was some mile or so in length, and we had walked for an hour after surmounting it before the coach overtook us." He then relates how they breakfasted at Bath, and, after a second day of adventures and fatigue, slept at a small town near Marlborough Forest; breakfasted the third morning at Reading, and the coach having been upset at Brentford the same afternoon, were detained there four hours, and did not reach London till ten o'clock at night, *having spent nearly three days and two nights upon the entire journey.* "About a fortnight since,"

he continues, "family matters compelled me to start off to Exeter at a moment's notice. I received the summons as I was sitting at breakfast in the little parlour behind my shop, a little after eight. In less than an hour an omnibus had set me down at the Great Western Railway, whence an express train was on the point of starting. In two minutes I had paid my fare, and, pocketing my ticket, was in two more comfortably seated in a second-class carriage, where I had a little leisure to look about me, and note the ease and indifference with which travellers of the present day transfer themselves from one side of the island to the other. A man in a blue uniform blew a shrill whistle, and in an instant we glided off from the station with a soft, imperceptible motion, of which we should hardly have been aware but for the rapid march backwards of the objects on each side of us. Every now and then we transixed a bridge with a sudden and deafening 'shrang,' or we shot past a station which seemed to fly away from us on the wings of the wind, and vanished far in the rear ere I had time to turn my head to see what had become of it. Then we met another train coming to London, with which we exchanged a crashing salute of some seconds' duration; then a town and now a village rushed fitfully past, the towers and steeples turning themselves round like negroes jumping Jim Crow. Windsor Castle came in sight, and soon we fired off Slough with a 'bang' and a roar that woke up the echoes from every brick. Maidenhead and Reading were nothing more to us than a couple of rackety explosions, which we did not condescend to notice. Then came a series of exquisite landscape scenery on the banks of the Thames, all flying past us like an arrow; and then, just an hour from the time of starting, we slackened speed as we approached Didcot, where we stopped a few short minutes, just to give our iron steed a drink out of the pump. This accomplished, we were off again in double-quick time, and in half an hour more were shot down to Swindon having got over seventy-seven miles of ground in an hour and a half.

From Swindon to Chippenham occupied twenty minutes; and then we rushed, roaring and bellowing, through the two-mile tunnel which perforates Box-hill, whence in a few minutes we emerged within sight of the city of Bath, where we arrived at ten minutes past twelve—*having performed a journey which so late as twenty years ago occupied a whole day, in two hours and twenty-five minutes.* After a short stay at Bath, we were shot through a series of tunnels and into Bristol in less than a quarter of an hour. From Bristol, by a somewhat winding route, which affords us a view of the Bristol Channel and Bridgewater Bay, and includes a few more stoppages than are allowed in the early part of the journey, we were steamed merrily along to Exeter, where I arrived at five-and-twenty minutes to three o'clock—*having retraced the distance (which forty years before it took me three days and two nights to accomplish, with much personal suffering and at the risk of my neck) in four hours and three-quarters,* every minute of which was one of perfect ease and pleasurable excitement"* [154].

But we must not anticipate another portion of our subject, and, before enlarging on the railway system, we must note the origin and progress of *canals*.

From the most remote periods cities built on navigable rivers had enjoyed the largest share of commercial prosperity, the causes of which were universally known.† It might therefore have been expected that British enterprise would have aimed to diffuse that prosperity by the creation of artificial rivers, especially as this cheap and easy mode of transport for goods had been long known and made available in various quarters of the world. *Canals*, both for purposes of navigation and irrigation, had intersected ancient Egypt and Assyria; they had existed in China from a period antecedent to the Christian era; had been constructed by the Romans in

* Leisure Hour, No. 86.

† Silent Revolution, p. 51.

Italy and about the outlets of the Rhine. In modern Europe canals were first cut by the Lombards in the eleventh and by the Dutch in the twelfth century, and from that time they have been the principal thoroughfares of Holland, which was intersected by them in every direction; yet, notwithstanding all this, the first English canal does not date farther back than 1755, when an act of Parliament was passed for constructing one eleven miles long, from the mouth of key Brook, in the river Mersey, to Gerrard's Bridge and St. Helen's.* Before this undertaking was finished, the Duke of Bridgewater commenced his celebrated canal, the construction of which established the fame of the celebrated engineer Brindley. A rich bed of coal had been discovered on his estate at Worsley, near Manchester, "but the charge of land carriage to the best markets was so great as to swallow up nearly the whole produce of the sales, the duke therefore obtained in 1757 an act of Parliament for the formation of a canal. The outlay was very great, but it soon cleared itself, and, besides itself becoming a source of large profit, the canal increased the value of the mines a hundred-fold. This experiment was decisive,"† and the great superiority of this mode of transit for heavy goods speedily becoming obvious, it was soon adopted on a most extensive scale, and about the beginning of the present century canals came into general use throughout the three kingdoms. These arteries of commerce traversed every county, and the aggregate length of the total number of canals in England alone now exceeds 2200 miles. In addition, too, to the canals themselves, such of the rivers as were capable of it were made navigable, so that it is affirmed that there is "no spot in England, south of Durham, which is more than fifteen miles distant from water communication, and in the principal manufacturing districts that distance is even smaller."‡

* Penny Cyclopædia, art. *Canals*.

† Silent Revolution, pp. 51, 52.

‡ Penny Cyclopædia, art. *Canals*.

When railroads were first introduced it was supposed that canals would no longer be wanted; that not only would a stop be put to the construction of new ones, but that many then in use would be drained and converted into railway lines. Experience, however, has proved that, in many instances, even where railways have been most successful, they have not injuriously affected the profits of canals. The reason of this may be easily perceived. The expenses of maintaining a railroad in good working order are far greater than those incurred in the keeping up of a canal, hence the managers of railways are compelled to impose for the transport of merchandize heavier charges than are sufficient to pay the proprietors of canals; and a large proportion of the internal traffic of England consists of goods, the value of which is small as compared with their weight and bulk, and which will consequently not bear the higher tolls demanded by the "*line*," the speed attained by which is, moreover, not required for their conveyance; hence we have no ground for supposing that any existing canals will be altogether abandoned or superseded by the railways.

The construction of canals is an undertaking of greater or less difficulty, according to the nature of the country through which they pass. Where this is level the work is comparatively easy, but where the country is very hilly the enterprise is much more formidable. Either a circuitous route must be adopted, or deep cuttings and tunnels must be made; the latter course is for the most part preferred. "Some of these cuttings are of great length. The tunnel at Blisworth, on the Grand Junction canal, is 3080 yards in length (that is, one mile and three quarters). The underground cuttings in the Duke of Bridgewater's canal are said to be altogether eighteen miles long, and to have cost £170,000. The Marsden tunnel, on the Huddersfield canal, is 5451 yards long (above three miles). The tunnel at Sapperton, on the Thames and Severn canal, is two miles and three furlongs in length and 250 feet below the highest point of the hill through which

the cutting is made. In the Thames and Medway canal, between Gravesend and Rochester, a tunnel two miles and one-eighth in length, is cut through the chalk; and one of the tunnels of the Leominster canal (at Pensax) is 3850 yards long. Besides these, there are many similar cuttings of smaller dimensions in different parts of the kingdom.* Sometimes the canal itself has to be carried at a high elevation across a stream or over a deep valley, in these cases an aqueduct bridge is erected. These, in order to sustain the constant and prodigious weight of water, must be made either of masonry or cast-iron. The late Mr. Telford constructed a cast-iron aqueduct 186 feet in length, by which the Shrewsbury canal is carried over the valley of the Tern at Long Mill; and at Pont-y-Cysylte, in North Wales, is a similar but more stupendous work, "where the Ellesmere and Chester canal is carried over the Dee. This aqueduct is at an elevation of 125 feet above the bed of the river, on nineteen pairs of stone pillars, fifty-two feet apart. The trough which forms the canal is 988 feet long, twenty feet wide, and six feet deep, and is composed altogether of cast-iron plates. The invention of *locks*, as a means of carrying canals through an uneven country, is said to be modern. A lock is a chamber formed of masonry, so contrived that the level of the water which it contains may be made to coincide with either the upper or lower level of the canal." It occupies the exact spot where the difference of level has to be overcome, and is provided with two pairs of gates, one of which is placed at each end of the chamber. While the gates at the lower end are opened, and those at the upper end closed, the water in the lock will stand at the lower level; but when the lower gates are closed and the upper opened, it will stand at the level of the water in the upper part of the canal. "In the first case, a boat may be floated into the lock from the lower part of the canal, and if the lower gates be then closed, and water admitted from the upper level, until the surface of the lock is in a line with

* Penny Cyclopædia, art. *Canals*.

the water above, the boat will be floated up and, on the opening of the upper gates, may be passed onward. By reversing the course of proceeding, boats may be as readily conveyed from the upper to the lower level."*

We now approach the epoch of a mightier advance in the science of locomotion, and a greater improvement in the means of transit, than any that has previously been recorded in the page of the world's history,—*the introduction of steam-power for propelling carriages on railways*. The possibility of applying the steam-engine to locomotive purposes was conceived by several of its first improvers; it has been affirmed that the first of these was Dr. Roberts, of Glasgow. In 1784, a plan for carrying out this idea was suggested by Mr. Watt, in the specification of one of his patents, and a model of a steam-carriage was exhibited in Edinburgh by a Mr. Symington. In 1802, a high-pressure engine, admirably adapted for purposes of locomotion, was patented by Messrs. Trevethick and Vivian, who were the first to give practical application to the theory. Within a few years, they built several carriages, one of which was constructed for use upon an ordinary road. In 1805, they made various experiments on a tramway near Merthyr Tydvil, in Glamorganshire, which fully proved the feasibility of their views.† The ma-

* Penny Cyclopædia, art. *Canals*.

† It was twenty-one years previous to this date that the first experiment was made with a locomotive steam-carriage on a common road. "It was a dark night, in the year 1784, that the venerable clergyman in the town of Redruth, in Cornwall, was taking an evening walk in a long and lonely lane which led to his church, when an unearthly noise burst forth, and to his horror he beheld approaching him, at a furious speed, an indescribable creature of legs, arms, and wheels, whose body seemed glowing with internal fires, and whose rapid gasps for breath appeared to indicate some deadly struggle within. The old gentleman shouted lustily for help, and to his great relief he found a friend in the person of a Mr. Murdock, who explained to him that this dreadful monster was in fact a machine for locomotion, generally tractable, though not always so, which he had incautiously allowed to escape from its leading-strings. Such was the strange *début* into its sphere of practical activity which was made by the locomotive engine."—*Leisure Hour*, No. 91.

chines employed by these gentlemen possessed almost all the features and appliances of the more modern locomotives, and their ideas upon the subject were so comprehensive that succeeding engineers have had little to do but improve upon and more fully carry out their suggestions. The ancients were doubtless aware of the reduction of draught arising from the use of *tramways*, for in the sculptures of ancient Egypt heavy objects are represented drawn by oxen on level blocks of wood or stone. Wooden tram or waggon-ways were first laid down and used in the collieries of the north of England about the time of James I., to reduce the labour of drawing the coals from the pits to the places of shipment, near Newcastle. At first, they were merely pieces of wood imbedded in the ordinary roads, so as to form wheel-tracks for the carts and waggons, and which, presenting a far smoother surface than the roads themselves, greatly increased the available power of the horses. Improvements were gradually adopted, and about 1765 the customary plan was, first, to make the road as even and level as possible, then to lay across it pieces of wood about six feet long, and as many inches thick, and upon these to place other pieces lengthwise, and fasten them by pegs to the cross pieces, or *sleepers* below; the road was then finished by filling the spaces between the sleepers and under the rails with ashes, gravel, or other road materials.* The waggons used upon these railroads contained from two to three tons of coal, and were mounted on small weels, furnished with a *flange*, or projecting rim, which kept the vehicle in its proper place upon the rails. Upon the surface of these, wherever a steep ascent or sharp curve rendered the draught harder than usual, it was customary to nail thin iron plates, by the greater smoothness of which difficult points were passed without inconvenience, or occasion for using extra horses. Sometimes these railways were of *stone*, but such, though more durable, were not so smooth as those of wood. Cast-iron bars, nailed upon the wooden tramways, were first

* Penny Cyclopædia, art. *Railways*.

used at the Colebrook Dale Iron-works about the year 1767, and rails with upright rims, or flanges, to keep carriages from running off the line, instead of flanges on the wheels themselves, were first laid down at the Duke of Norfolk's colliery, near Sheffield, in 1776. Subsequently, blocks of stone were introduced as supports, instead of the wooden sleepers, and, affording a firmer foundation, were found preferable where a more durable road was required. This kind of railway, called, from its form, and by way of distinction, the *plate* railway, is, with many improvements (amongst others that the rails themselves are now almost always made *wholly* of iron), still used extensively in mining districts. Another kind, with many varieties of construction, is the *edge* railway, which is considered to economise more effectually the strength of the iron, and has superseded the *plate* railway in many of the collieries of Durham and Northumberland. This is the rail generally employed upon the great passenger lines throughout the country. The introduction of *wrought* instead of *cast* iron rails tended greatly to diminish the risk of accident and delay, and probably without this improvement (comparatively a recent one) the application of steam-power to railways, and their adoption for the conveyance of passengers, and as a means of rapid travelling, would have been much retarded. Indeed, for a long period after the experiments of Mr. Trevethick, progress in the use of the locomotive was obstructed by imaginary difficulties. Mr. Trevethick himself was aware that if too heavy a load were attached to his machine, or it were required to ascend a steep incline, the wheels would slip round without advancing, the adhesion between them and the rails being sufficient only to ensure the progress of the engine on a level or nearly level road; from this circumstance, however, many took up with the *erroneous* idea that the adhesion between the wheels and rails was, on account of the smoothness of both, insufficient for any practical purpose, even upon level ground; and much ingenuity was consequently expended in contrivances for

securing progressive motion by other means. One of the experimentalists was a Mr. Blenkinsop, who, in 1811, obtained a patent for a locomotive in which the power was applied to a *cogged* wheel, instead of a *plain* one, the teeth entering and working in a rack laid down beside the ordinary rails. Engines on this plan were worked for some years on a colliery line near Leeds, and drew very heavy loads at a slow rate, but the friction of the machinery was found to be excessive. Shortly afterwards a Mr. Brunton invented a locomotive machine, which advanced by the *alternate motion of two legs* thrust out from the hinder end of the engine. This singular contrivance was carried into effect, and the machine was found to have considerable power; but an accident caused the inventor to abandon it. Similar propellers have since been tried on common roads. In 1814 and 1815, engines with *plain wheels* only were again tried, and being found efficient, were used upon colliery railways in the north of England. Since that time, however, several contrivances have been resorted to in order to increase the adhesion, and enable locomotives to mount ascents of greater inclination than they can surmount with plain or smooth wheels alone.*

The first railway of any importance opened in England, for passengers and general traffic, was the Liverpool and Manchester line, in 1830. Whilst the projectors of this great work were engaged in its design and execution, it was with them a matter of discussion whether steam or horse power should be employed to work it. The immense advantages of the former were then but partially developed, and as the line approached completion, the directors took great pains to ascertain the plan it would be best for them to adopt. At length they decided to offer a premium of five hundred pounds for the best locomotive which should fulfil certain conditions, of which some were "that it should not emit smoke, should draw three times its own weight at the rate of *ten* miles per

* Penny Cyclopædia, art. *Railways*.

hour, should be supported on springs, and should not cost more than five hundred and fifty pounds." The trial came off, and the premium was obtained by an engine (the "Rocket") constructed by the celebrated Robert Stephenson. This engine, with a load of seventeen tons, averaged a speed of fourteen miles an hour. Other engines of much greater power were afterwards built, and imperfect as these first attempts were, they proved (what multitudes, and even many scientific men, had pronounced impossible) that a rate of travelling might be attained by steam carriages on railways far beyond anything that horses could effect.* Indeed, as we now sit in a carriage which flies over the country at the rate of thirty to fifty miles an hour, it is amusing to look back at the dogmatism of those who declared and "demonstrated" the impossibility of the success of railway locomotion. An amusing anecdote is told respecting Robert Stephenson during the infancy of railway construction. He was giving evidence before a committee of the House of Commons, in support of a bill for authorizing the formation of a railway, upon which steam power was proposed to be used—probably the Liverpool and Manchester line; being asked the speed which he calculated as attainable with safety, he replied, "from twelve to fifteen miles an hour:" a statement received with evident marks of scepticism by the honourable members present. One of these members, interested in the success of the measure, took Mr. Stephenson aside, and told him that his wild and visionary statements were calculated to imperil the bill, and counselled him to withdraw his statement, and substitute another more in accordance with reason and sound sense. Stephenson replied, "Sir, if I am recalled I shall make matters worse; for I should have said twenty-six miles an hour instead of fifteen, if I had not been fearful of scaring the committee." The honourable member left him as a hopeless and incurable enthusiast. Twenty-six miles an hour is now the minimum performance of Stephenson's engines,

* Penny Cyclopædia, art. *Railways*.

and one hundred miles an hour can be exacted from some, if considered desirable.

Towns and cities protested against the intrusion of the railways. Agricultural districts shuddered at the thought of the invasion of their peaceful retreats, and the sully of the purity of the fleeces of the sheep by the plutonic clouds of smoke which would arise from the chimneys of the engines. Honourable members declared within the halls of Parliament that "railways were dangerous and delusive speculations," and, "above all, that they were unknown to the constitution of this country." When the London and Birmingham line was proposed, a whole chorus of voices shouted opposition, or uttered withering sarcasms on the project. It was affirmed that it would be "a drag on the country;" that its works would soon be objects suited only for the contemplation of the antiquary; and that "every hill and valley between the two towns would behold falling arches and ruined viaducts." Medical men asserted that the tunnels would be eminently dangerous, and that the deafening roar, the fearful gloom, the clanking chains, the dismal glare of the locomotive, and a thousand other horrors which were vividly depicted, were so alarming, that such inventions ought to be utterly and for ever repudiated.

Such is only a very faint picture of the opposition which had to be encountered by those who undertook the commencement of our lines. But without dwelling further on this part of the subject, we may just look at the results of railway enterprise.

During the ten years immediately succeeding the opening of the Liverpool and Manchester line, it observed a slow and cautious movement. Up to 1840, only 1100 miles of railway were open. Within the next ten years, no less than 800 acts were passed, sanctioning railway projects, and the extent of line thus legalized, amounted to 10,655 miles. The number of miles of railway open for traffic, together with the length in progress, amounted in 1849 to 7238 miles. Down

to that date there had been expended more than 200 *millions of pounds* upon railway projects. At the end of 1851, the length of line open and in progress amounted, in all, to about 8000 miles; the total amount of capital expended was £281,685,960, making the average cost of construction for each mile about £35,210. The number of persons employed on railways up to June, 1851, was 106,501.

If you examine one of Bradshaw's Railway Maps, you will see at a glance that the whole country is now intersected by a vast and elaborate network of iron-roads, joining and crossing each other in all directions, and encountering in their varied routes every description of natural and artificial obstacle. It is easy to *speak*, as has been observed, of "valleys being spanned, and hills cut through, of mountains bored by tunnels, and quicksands and morasses turned into solid ground; but to accomplish these undertakings by science and skill in conception, and by hard and persevering labour in the execution, is another thing." When, indeed, we reflect on the immense practical difficulties, the cost and labour of constructing a single railroad of any length, we may well regard the formation of such numbers as, perhaps, the most wonderful exemplification of human ingenuity, enterprise, and energy that we possess. To obtain, so far as circumstances will allow, a uniformity of level upon a road of 100 or 200 miles long, passing through every description of country—to effect this, in the most economical way, by means of embankments and viaducts, cuttings and tunnels—to determine the precise course of a line, that it may unite (as much as possible) *directness* with an avoidance of natural difficulties—to decide upon the degree of curvature which may be given it, in order that it may thread its course among hills, valleys, swamps, parks, rivers, and towns, which may lie upon the route—all these are problems the proper solution of which requires the union of some of the highest mental faculties with which man is endowed.

Regarding the prodigious amount of labour in the execu-

tion of these works of art, a few facts will supply the most striking illustration. For instance, in the formation of cuttings through the hills upon the line immense masses of material have had to be removed. Thus, the Olive-Mount cutting on the Liverpool and Manchester line is in some parts more than 100 feet deep, and 480,000 cubic yards of stone were removed in its excavation. From the Haslingden cutting on the East Lancashire line, nearly half a million yards of peat, gravel, and sand were taken away; a large amount of the material being so saturated with water as to be almost fluid. The Blisworth cutting passes through limestone and clay, and upwards of 1,000,000 cubic yards had to be excavated, about a third of which was of a texture nearly as hard as flint; this material, if arranged in an embankment a yard high and a yard in width, would extend from the British Channel throughout the entire length of England and Scotland, and to the furthest of the group of the Orkney Islands. In effecting this cutting 3000 barrels of gunpowder were expended in blasting, and the entire cost was about a quarter of a million sterling. The Tring cutting on the London and Birmingham railway traverses a chalk ridge for nearly two and a half miles, being of an average depth of forty feet. No less than 1,400,000 cubic yards of chalk were removed in its excavation.* The difficulties, too, which have been overcome in the construction of embankments, for conducting the railways at elevations across low valleys, "have sometimes been immense, and occasionally very unexpected ones have arisen. Thus, on one occasion, an embankment was observed gradually to sink without any apparent cause, and at length the adjoining fields began to rise, the superincumbent mass having penetrated some less solid stratum below, which, by expanding at its base, had elevated without otherwise disturbing the adjoining surface." It has been also asserted that in North America a railway embankment once suddenly dis-

* Leisure Hour, No. 63.

appeared from view, and was found to have sunk in sixty feet of water. An extensive lake, it appeared, had in the course of ages been covered with various deposits, which had formed a soil of sufficient stability to be cultivated for agricultural purposes, but unable to sustain the extraordinary weight of a railroad. In the case of Chat Moss, on the Liverpool and Manchester line, the engineer had to contrive some method for carrying an embankment across a soft morass, extending over an area of twelve square miles, and estimated to contain at least 60,000,000 tons of vegetable matter, much of which was so pulpy as to cause iron to sink in it by its own weight. This task, however, was accomplished, and the railway crosses it with perfect security to the passengers. Part of the embankment is sustained by a platform of timber and hurdles, covered with earth and broken stone, and floating, so to speak, on the spongy swamp below. Some of the incidents attending the formation of such works have been remarkable. After the completion of the Wolverhampton embankment it was observed, very unaccountably, "to display certain volcanic indications. It first began to smoke, and then became exceedingly hot, while a slow smouldering flame might at night be seen to rise from it. The people in the neighbourhood were filled with alarm, and by some it was confidently affirmed that the embankment would certainly blow up." After the continuance of this spontaneous combustion for some time the fiery energies of the material were exhausted, and "it was found that the phenomenon had been occasioned by the presence of a large quantity of sulphuret of iron."*

"The earth-works on most of the great lines of railway in England are very extensive; in many cases averaging from 100,000 to 150,000 cubic yards per mile. On the London and Birmingham line alone the quantity of earth and stone removed was about 16,000,000 cubic yards, which, if formed

* Leisure Hour, vol. ii. pp. 169, 170.

into a belt three feet wide and one high *would more than encompass the earth at the equator !*"* It will be interesting to contrast this modern achievement with one of the most stupendous works of antiquity. The Great Pyramid of Gizeh occupied originally an area of thirteen acres, one rood, and twenty-two poles, and was, when complete, 450 feet in vertical height, comprising about 89,028,000 cubic feet of solid masonry (Gliddon's *Otia Egyptiaca*, pp. 29, 31). This stone would suffice to construct one thousand columns 200 feet in height, as large as "the Monument" in London, containing 89,000 cubic feet in each. Compare this with the amount of work in one line of railway, such as the London and North Western: the cubical contents of the Pyramid give 3,297,333 cubic yards of matter, while the earth and stone removed on the railway is equal to 16,000,000 of cubic yards, being *five times the quantity in the Pyramid*. Again, taking the London and North Western railway as equal to one-eightieth part of the 8000 or 9000 miles of railway constructed, we find that the labour and enterprise already bestowed on railways in Great Britain amount to the removal of 1,280,000,000 of cubic yards of material, equivalent to the quantity contained in 400 *structures as large as the Great Pyramid of Gizeh*. Another contrast will not be without interest and instruction to you as working men. The ancient work, the Pyramid, according to Herodotus, was effected by *compulsory* labour, and at a great expenditure of human life, and for the glorification of a royal despot; the modern works have been effected by *free labour* and enterprise, have resulted in finding profitable employment to tens of thousands, contributing to the comfort, civilization, and happiness of all classes of the people, including that to which you belong. Truly, the times have fallen unto us in pleasanter places; let us not forget to be grateful for *this* privilege.

The amount of *masonry and brickwork* required in the various erections of a railway is very great. The lining of

* Penny Cyclopædia, art. *Railways*.

tunnels, where the soil requires support, forms a peculiar kind of work. Arching of almost every kind is required in viaducts, bridges, and drains, and simpler work for station building and retaining walls. These last are used to sustain the sides of cuttings and embankments, when it is desirable, from the value of the adjacent land, to make these more vertical than would otherwise be consistent with safety. Viaducts of great magnitude are often executed for the purpose of crossing valleys at an elevation greater than could conveniently be obtained by embankment, and also for entering or passing through towns. They are usually of stone or brick, but sometimes of wood or iron. Bridges are required for crossing rivers, and very frequently at the intersection of roads, either over or under the railway, and as communications between properties severed by the line. From a statement in the "Encyclopædia Britannica," it appears that, taking the mean of nearly a hundred railways, the number of bridges averages about two and a quarter per mile. This gives, say, upon 8000 miles of railway constructed, no fewer than *eighteen thousand bridges*. What would our ancestors, who looked upon the construction of a few Roman bridges with astonishment, say, could they now pay a visit to the land of their birth?

In the formation of railways it is usual to commence those works first which take the longest time. Tunnels are generally the most formidable, and there is often great difficulty in calculating the time and expense of their construction, because unforeseen circumstances arise to retard their progress. The nature of the soil is tried by boring; but this sometimes seems favourable, while in reality difficulties may exist requiring great energy and an enormous outlay to overcome. As tunnels are, moreover, objectionable on other accounts, they are avoided as much as possible in the more recently-designed railways.* Sometimes, however, it is found that hills rise to such a height that it is better to penetrate

* Penny Cyclopædia, art. *Railways*.

them by means of a tunnel than by an open cutting ; it being a common axiom that a cutting of more than sixty feet in depth is the most costly of the two methods.

If you will again glance at a railway map, you will perceive that the principal lines of railway radiate towards London as to a focus. It is the great centre and heart of the system. The lines which enter London are twelve in number, and the termini are seven. These termini have been erected at a cost, it is said, of from thirty to forty millions of pounds ; they are so generally known that I need not detain you with particulars concerning them.

There is one remarkable fact, however, connected with the railway system in London, to which I should direct your attention, as being without its parallel elsewhere in this country. A universal break in the lines of twelve railways occurs, so that a person cannot perform the "through" journey in London without leaving the rail, traversing, with luggage, a great portion of a crowded metropolis, and again encountering all the bustle inconvenience, and loss of time, in seeking at a fresh station a recommencement of his journey.

The causes which have contributed to this state of things it would be difficult to define, and equally difficult to apportion the share of blame attaching to those to whom it is attributable. The various railway companies, having taken up their stations outside the metropolis, irrespective of any relation to a contemplated junction at a future day, have displayed much repugnance to incurring the cost of advancing their respective lines towards the centre. A Government commission appointed to report upon the subject came to a conclusion unfavourable to the approximation of the various lines, while the same short-sighted and unenlightened policy induced the Corporation of London to oppose the introduction of railway-lines within their limits. But the passage of railway-traffic through London, by some well-devised arterial line, is not far distant, indeed, it cannot longer be delayed, unless the traffic of the country is to be fatally afflicted with

aneurism of the heart. The effect of this interruption in the line of railway transit is, in many cases, equivalent to a loss of time and money which would represent a journey of sixty miles by railway, and frequently necessitates a detention in London of many hours. The evils which it inflicts on the metropolis cannot be estimated, either as it regards time and money expended, or inconvenience incurred. The traffic of twelve railways, hourly poured into cabs, omnibuses, and carts, traversing the streets in every direction, inflicts infinite annoyance, obstructs the thoroughfares, and causes an amount of wear and tear to the pavements which obliges their constant reparation, although constructed of the most durable materials. One well-contrived arterial connection of the railways north and south of the Thames would effectually remove from the streets that which at present so needlessly affects them. The evil has risen to its height, and a remedy cannot long be delayed. There attends, happily, on all these social conditions a remedial process, which puts itself into action, after more or less of suffering inflicted, eventually overturning opposition, rectifying that which is disordered, and asserting the force of right.

We must now return to the conveyances of the metropolis itself. After a reign of 200 years, the fall of the hackney-coach system came at last, and not before the change was both needed and desired. *Cabriolets*, or *cabs*, as they are now invariably termed, were introduced from France. There were 1150 on the stands of Paris, ten years before they were known or seen in London. Many of us can remember the old coaches, with their increasing dirt and discomfort, their mouldy musty straw, broken windows, frowsy cushions, steep, narrow steps, and high tottering springs. They grew worse from year to year, and every one felt the need of a reform; but it was not till 1823 that licenses for cabs were first obtained by Messrs. Bradshaw and Rotch, who started twelve, at eightpence per mile, the hackney-coach fare being then one shilling. The new vehicles becoming popular, their number

was subsequently increased to fifty, then to a hundred, and in less than nine years all restriction upon their use was abolished. Since their first introduction they have undergone great alterations and improvement. The first cabs ran upon two wheels; they were a species of gig, with a huge leathern hood for foul weather, which, being quite open in front, served as a sail to catch the wind, the driver occupying the seat in the dicky at the side. Several changes ensued before cabs finally assumed their present twofold form of the Hansom and the Clarence. The number now employed is estimated at 3600, and that they are an improvement upon the old conveyances few will question. "At the close of 1852, the licensed cab-drivers of London amounted to 6388, the licensed watermen to the stands amounted to 346, making a total of 6734; with their wives and families, they probably constitute a body of 25,000 individuals. To this enumeration has to be added about 1000 'bucks,' or men who have been, for bad conduct, deprived of their licenses, and who are continually loitering about the cab-stands, watching for casual employment by the regular drivers. These men are notoriously addicted to drunkenness, extortion, and even theft, and, from being associated with more worthy and honourable men, have brought indiscriminate odium upon the entire *corps*. Very many of the 'bucks' have been in prison. Very few of them are married men; their days are generally spent in the tap-room, while they mostly sleep in cabs at night. As these depraved men therefore are not recognised members of the body, although for convenience occasionally employed, it is not just to visit their irregularities upon the reputation of the licensed drivers. This fact, if generally known, may tend to assuage that bitterness which is so often displayed in speaking of these severely-censured individuals."* There is a curious drawing in the illustrated copy of Pennant, in the British Museum, whence we learn that a vehicle much resembling one of the modern cabs was in use some eighty years ago. It is a view

* Leisure Hour, No. 80.

of Temple Bar, with the heads of rebels still blackening over the arch, and beneath it a carriage like the *slice* or hind-part of an omnibus, with windows in front and a door behind, which is described as the carriage of the ingenious Mr. Moore, who, as is observed in Knight's 'London,' was, "like many other ingenious persons, before his age."

The *omnibus*, which now plays so prominent a part in the economy of London life, is of an origin still more recent than the cab. Like cabs, however, the omnibuses came from France. When first started many thought them a luxury; they may now be regarded as an absolute necessary to multitudes, on account of the distances they have daily to traverse. Were the omnibuses to "strike," as did the cabs, if only for a day, the business relations of the metropolis would be thrown into grand confusion. Mr. Shillibeer, the patentee of the improved mourning-coaches, was the introducer of this cheap and popular conveyance. In his youth he was a midshipman, afterwards studied coach-building in Long Acre, and, having attained proficiency in the art, set up in Paris as a maker of English coaches, and established a driving trade, being patronised by Prince Polignac and the aristocracy. In 1819 omnibuses were first started in that city by M. Lafitte, afterwards the minister of Louis Philippe. This induced Mr. Shillibeer to think that so economical a conveyance might with advantage be set up in London. Resolved to try the experiment, he, in 1829, disposed of his Parisian trade and came over;* and in order that the new vehicles might stand every chance of success, "and have the full *prestige* of respectability, he brought over with him two youths, both the sons of British naval officers, and the young gents were for a few weeks his 'conductors.' They were smartly dressed in

* Omnibuses had been previously tried in the English metropolis at the commencement of the present century, but had been found not to answer. In an old print of the Bank of England, taken about 1801, a carriage exactly like our present omnibus is represented.

‘blue cloth and togs.’ Their addressing any foreigner in French, and the French style of the whole affair, gave rise to the opinion that Mr. Shillibeer was a Frenchman, and that the English were indebted to a foreigner for the improvement of their carriage transit. His speculation was at once successful. His two vehicles carried each twenty-two persons, and were filled every journey. The form was that of the present omnibus, but larger and roomier, as the twenty-two were all accommodated inside; no one being on the outside but the driver. Three horses, yoked abreast, were used to draw these carriages. For some time, until the novelty wore off, there were crowds assembled to see the omnibuses start; and many ladies and gentlemen took their places in them from the Bank to the Yorkshire Stingo, in order that they might have the pleasure of riding back again. The fare was 1s. for the whole, and 6d. for half the distance, and each omnibus made twelve journeys to and fro every day. Mr. Shillibeer’s receipts were £100 a week. At first, he provided a few books, chiefly magazines, for the perusal of his customers; but this peripatetic library was discontinued in consequence of the customers abstracting the books.

In a few months this enterprising man had twelve of his new conveyances at work. The proprietors of the short stage-coaches grumbled and complained, but finding that they got but little sympathy they made a merit of necessity, and started opposition vehicles. The frequent ‘litigations of the proprietors, however, continued till they gradually led, in many cases, to their coalition for mutual protection, as they found by experience that, to them, the *co-operative* was likely to be a more efficient principle than the *competitive*. Many joint-stock schemes of gigantic dimensions were originated, under the names of “Conveyance Companies” or “Associations.”

Many of these associations, as well as some private proprietors, own from forty to fifty-six omnibuses each, which involve the investment of an enormous capital, as will be evident from the fact that each omnibus costs somewhat more

than £100, and requires ten horses to work it, which, at £20 each, amounts to £200, besides £30 for harness and other items. This, however, is only the *prime* cost. The *annual* expenditure subsequently incurred is scarcely short of £900 for each omnibus. There being nearly 3000 London omnibuses, the aggregate original cost would reach £1,020,000, while it requires a further annual outlay of no less than £2,700,000 to maintain them on the streets.

"Low as omnibus fares now are," says a recent writer, "there is probably expended every year by the public of the metropolis the enormous sum of £3,000,000 in omnibus fares. The population of the metropolis is scarcely 2,500,000; so that there is an average expenditure of 24s. by each inhabitant in London every year in omnibus-riding, which would pay for ninety-six threepenny rides. But as many classes are shut out from these conveniences, and others decline to use them, the parties *actually using* our metropolitan omnibuses must each, on an average, expend nearly double the amount specified, and have probably an average of 200 economical rides during the year. This vast branch of locomotion is, in fact, the greatest in the country next to railway traffic; and, as can be shown, even greater than that, so far as the metropolis is concerned. *Thirty thousand horses* are employed in connection with the London omnibuses. It costs very nearly £1,000,000 each year to provide them with necessary hay and straw, and more than three-fourths of that sum to buy them corn. The mere shoeing of the horses may be reckoned at £7800 a year, and the wear and tear of each omnibus is at the rate of £50 annually.

"The taxes paid by these carriages are also considerable. Some of our readers will be surprised to learn that each London omnibus pays about £108 every year for duty to Government, or, in all, £324,000 annually."

The immense distances annually travelled by omnibuses are equally surprising. "The average journey is six miles, and that distance is, in some cases, travelled twelve times a

day by each 'bus ; or, as it is called, 'six there and six back.' Some perform the journey only ten times a day, and a few a still less number of times. Now, taking the average as between forty and fifty miles a day travelled by each omnibus, and computing the omnibuses daily running as 3000, we find a 'travel' of say, 140,000 miles daily—or nearly a million weekly—or a yearly 'travel' of more than 50,000,000 of miles—an extent that almost defies a parallel in any distances popularly familiar. The accuracy of this estimate is proved by the sum paid to the excise for mileage. . . . The extent of individual travel by some of the omnibus-drivers is enormous. Some men drive seventy-two miles every day, with the exception of twelve miles less every second Sunday ; equal in six years to 155,808 miles—being a distance more than *six times round the globe* ! Reckoning, too, only fifteen passengers each journey, and ten journeys a day, we have 150 passengers by each 'bus, or 450,000 by the entire London omnibuses, which is nearly one-fifth of the whole population. The gross number every week consequently exceeds three millions, and during the year runs up to the enormous aggregate of *one hundred and fifty-six millions* of persons." *

The short-stages which used to run between London and the suburbs have been entirely superseded by the omnibus, and there is reason to think that great improvements will ere long be made in the construction of these vehicles, both as regards dimensions, light, and ventilation. Carriages on an improved model in these respects have lately been started on some of the principal lines of road.†

We have thus traced the progress of British locomotion, both metropolitan and provincial, from the earliest ages, and the striking contrast between those times and the present

* Leisure Hour, No. 80.

† While improvement is anticipated in the construction of omnibuses, it is earnestly to be desired that some amelioration may take place in the social and

cannot fail to excite the interest and astonishment of all. We now wonder how men lived in those "good old times," when the streets of London were full of perils, pits, and sloughs: their silence never broken by the passing wheel; when journeys, short or long, were invariably performed on horseback; when Edinburgh was further from London than are now the cities of New York or Montreal; when there was no post-office; and when not only the locomotive, but the coach—private, stage, or hackney—and even the slow travelling waggon, were alike unknown. Yet such things were, and the different circumstances under which we live should awaken feelings of lively gratitude. What facilities do we enjoy for affectionate intercourse with those we love, separated from us by local residence, compared with what our forefathers possessed! What opportunities are afforded to all classes for a better acquaintance with the varied beauties of nature; for exchanging brick and mortar for green fields and leafy woods, the smoke of the town for the pure breath of

moral condition of that large but meritorious class, the drivers and conductors of our omnibuses and cabs, who have a strong claim upon the sympathy, support, and kindly aid of society. Many, indeed most of them, are in a state of degradation truly painful. Their condition, and the means by which we may assist in raising them, are well set forth in a work recently published: "The Million-peopled City; or, one-half of the people of London made known to the other half." By John Garwood, M.A. London: Wertheim and Macintosh. The author shows that one of the most fruitful causes of their demoralization is their almost universal employment on the Lord's-day. They are compelled, after six days of incessant and arduous toil, either to lose that seventh day's rest, to which they have an undoubted right, or to sacrifice their situations, as few of their employers will ever concede, it and to ask it would be, in many cases, to ensure dismissal; they have thus no time either for physical relaxation, mental culture, moral and religious instruction, or social enjoyment in the bosom of their families. Many deeply feel this privation; so much so, that between 2000 or 3000 recently signed a petition against the opening of the Crystal Palace on Sundays, doubtless apprehending it would increase their Sunday toil. The condition of the omnibus-men is, in these respects, worse than that of the cab-drivers, for the running of omnibuses on the Sunday is more general than the use of cabs, because it is more profitable, while the labour of the men is usually more severe and oppressive. These facts should be borne constantly in mind, *especially by those who needlessly and inconsiderately employ these vehicles on the Lord's-day.*

heaven! What a wonderful change in the moral aspect of society has resulted from the prompt and almost perfect system of communication now established. The laws are less cruel, because their administration is effective. Instead of the nation being divided into the two classes of *high* and *low*, the noble and the peasant—the second class the serfs and vassals of the first—we have a numerous and influential middle class, possessed of wealth and education, the fruits of industry and commercial enterprise, constituting the main bulwark of the nation's liberties; many of the members of this class possessed of Christian principle are foremost in those works of philanthropy which have raised Britain to a position unequalled in the previous history of the world. The greater part of these blessings we owe, under God, to those inventions that have *brought men together*, and by so doing have dispelled the mists of prejudice, given an impulse to inquiry, advanced learning, trade, and commerce, and promoted the diffusion of Christian truth. The enmity of adjoining nations is in course of mitigation, from the same facilities of transit, leading to a better acquaintance with each other, and an interchange of visits and acts of courtesy on the parts of the inhabitants. The poet of fifty years ago would not now write with the same degree of truth—

“ Nations divided by a narrow frith
 Abhor each other ; mountains interposed
 Make enemies of nations.”

The railway and the steam-boat and the telegraph are rapidly effacing the barriers which once divided enemies, but which are henceforth, we trust, scarcely to separate friends; while a portion of the press labours unceasingly to set neighbouring nations by the ears, while the laugh goes merrily forward against those who labour to promote peace, while peace-makers are disagreed as to the best means of procuring that inestimable blessing, the cause of peace and good-will is forwarded by each loaded train or freighted boat whose engine pants towards its destination.

We certainly have no right to say that "the former days were better than these," and if, like the complainers of all ages, we *should* say so, it would prove nothing but our own ignorance, and unreflecting insensibility to the superior privileges we enjoy.

Not only in Great Britain, but beyond her territories, by sea and by land, vast progress is making as it regards facilities of locomotion. Gigantic schemes of ocean traffic are in process of accomplishment;* mighty trunk lines are projected, which will unite, in the bands of mutual intercourse and interest, vast races of men now separated by the barriers of an arbitrary geography; and as these extend, and other agencies are brought into activity, for the communion of peoples, men will, or at least should, learn the great lesson that they are the children of a common father, brethren of one great family, and heirs of the same destiny; and that their highest happiness is to be promoted by the diffusion throughout the world of the Gospel of the "Prince of Peace," who came to render possible "Peace on earth, as well as goodwill towards men." Willingly would we say with the poet—

"Lay down your rails, ye nations, near and far;
Yoke your full trains to steam's triumphal car;
Link town to town, and in these iron bands
Unite the strange and oft-embattled lands.
Peace and improvement round each train shall soar,
And knowledge light the ignorance of yore;—
Men, join'd in amity, shall wonder long
That state had power to lead their fathers wrong;
Or that false glory lured their hearts astray,
And made it virtuous and sublime to slay."

*The subject of *Naval Locomotion* has been necessarily omitted in these lectures, and is of sufficient importance to claim a book to itself; the projected schemes in this respect are so vast, moreover, that it is but fair to wait until they have been afforded opportunity for development. The writer upon the progress of this department, whoever he may be, will have to chronicle shortly greater things than have been written of locomotion on land.

